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WENDY CARLOS

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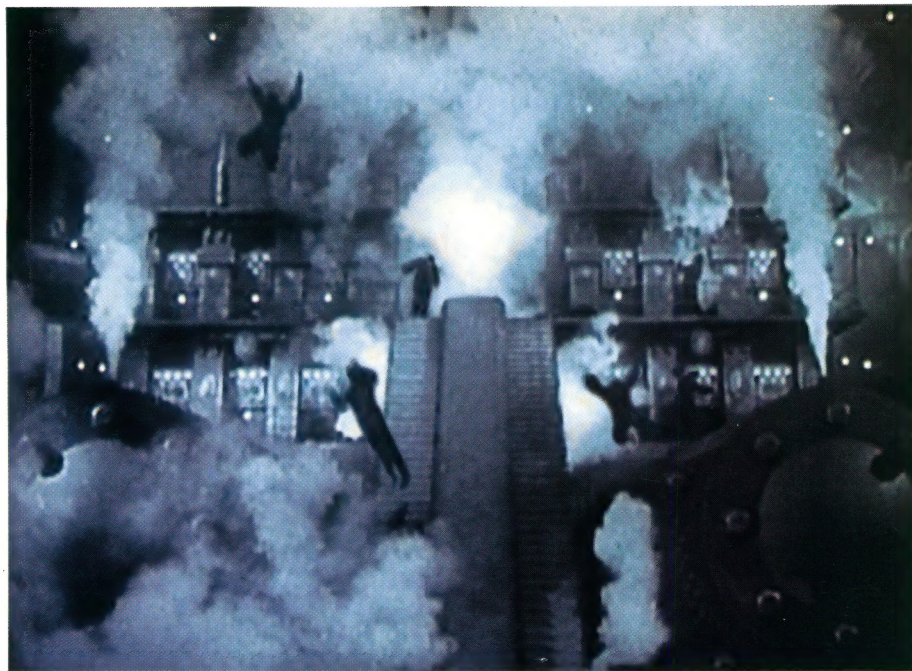
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Features

26 WINDOWS SEQUENCERS

PLENTY OF MIDI RECORDING POWER CAN BE YOURS for under \$100, if you own a Windows PC: Great notation, tons of tracks, slick synchronization, or pumped-up editing muscle. But you won't find one sequencer that does it all. Check out our hands-on reviews of seven snazzy entry-level sequencers.

50 12 WHO COUNT: WENDY CARLOS

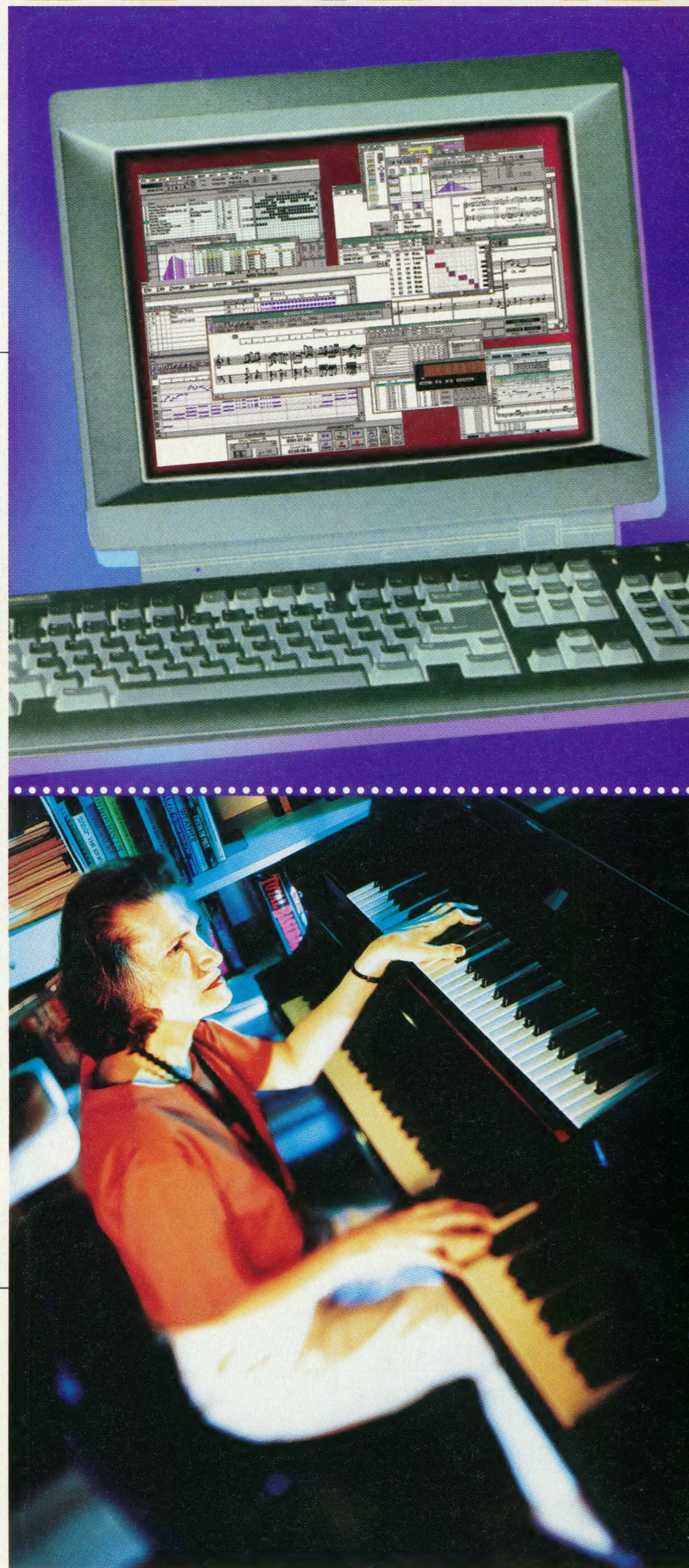
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64 20th ANNIVERSARY MEGA-GIVEAWAY

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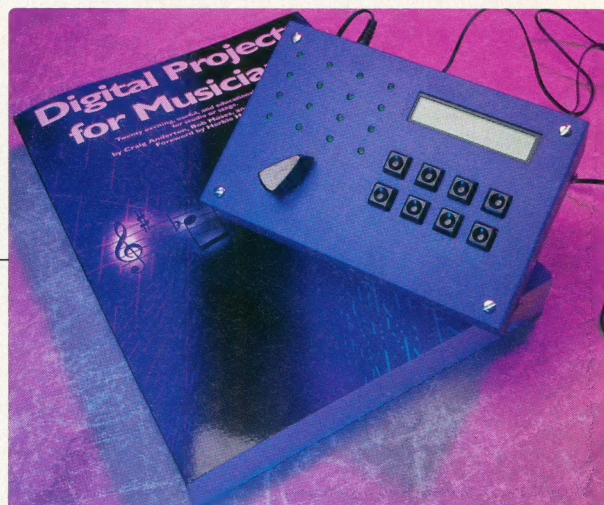
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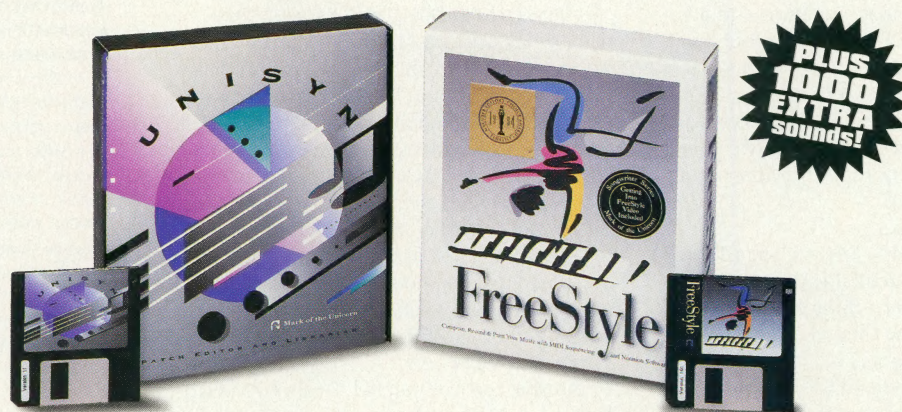


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An American Tale



In our last episode, Selma J. Hawkins, a.k.a. MC Jane Doe, was cruisin' the Infobahn in search of life, liberty, and a MIDI file or two from the *Keyboard* Web site when her front door shattered and a dozen heavily armed troops charged in.

With military precision Selma was surrounded by impossibly long-barreled projectile weapons — mostly machine guns and a 12-gauge or two. "RWF! Freeze! Keep your hands where we can see them. Do not touch that computer," one intruder screamed.

Wide-eyed and terrified, Hawkins slowly put her hands in the air as flak-jacketed RWF agents fanned out to other rooms of her apartment.

"Check over there."

"Look what we got here."

"Don't touch that — it's evidence."

Selma hardly noticed the sound of things breaking, clothes being flung out of drawers, heavy furniture being moved. "Why are you doing this?" she pleaded.

"Are you Selma J. Hawkins? We have reason to believe you are engaged in illegal activities and are hereby notifying you that we are performing a warrantless search of your premises based on information gained by means of wiretap, paid informants, and well-founded hunches. Should we discover illegal activity or contraband, you will be placed under arrest."

Hawkins closed her eyes. The jig was up. It was only a matter of minutes before they discovered her true identity, MC Jane Doe. On-line polka/rap queen extraordinaire. America's most wanted criminal.

From a far room a voice called out. "Hey boss. Better take a look at this."

Motioning for other RWF agents to bring Selma along, the agent in charge walked into a bedroom recording studio. "What have you got, Jenkins?"

"Looks like MIDI stuff. Synthesizer modules, mixing board, a TR-808 over there — haven't seen one of those in years. Nothing illegal in that rack. But look at this," said Jenkins, motioning to a hardshell case partially visible beneath the bedspread.

"Hmm. I see what you mean. Ms. Hawkins, is that an accordion?"

Before Selma could reply, Jenkins called out, "Boss! We got her. There's a sampler over here and a Macintosh too."

"This looks bad for you, Ms. Hawkins. The accordion we could have overlooked. But samplers are machines of the Devil, used to make

rap music and send subversive subliminal messages. You must know that Macintosh computers have been illegal since January 1st. Hell, after Mr. Gates bailed our sorry butts out of that deficit thing, it was the least Congress and the President could do."

Another agent entered the room. "You should see what she was looking at on the computer in the living room," he said, pausing for maximum dramatic effect. "She's got a window open to a world of pre-version! It's the Internet."

A collective gasp issued throughout the apartment. An RWF agent locked and loaded his weapon. Others prepared for violence.

"It gets worse, boss," Jenkins said. "Look at these lyrics. It's rap. Absolutely illegal. These 'songs,' if you can call them that, express feelings of anger and rage. The Supreme Court ruled this stuff unconstitutional because it interferes with everyone's right to the pursuit of happiness . . . you don't think she's MC Jane Doe, do you?" Digging through Selma's lyric sheets, Jenkins uncovered a copy of an old magazine. "Hey. She's got a copy of *Keyboard*. That pornographic rag that printed all those interviews with foul-mouthed musicians with weird haircuts. At least this one's got a review of seven inexpensive Windows sequencers."

Another agent interrupted. "Yeah, but I heard they were all a bunch of pencil-necked geeks who wore white lab coats and relied on spectrum analyzers and computers when they did product reviews! And then they had the gall to say negative things about products that well-meaning advertisers spent good money on promoting in their pages."

More than a few RWF agents hissed.

"That's not true!" Selma screamed. "They were all musicians. Only a couple of them were pencil-necked. They never used spec tests to do anything more than quantify what their ears were telling them."

"I've heard enough. Cuff this human scum." Binding her hands, Jenkins began reading Selma her rights. "You have the right to own an assault weapon. . . ."

All this was too much for Selma Hawkins. "Wait! I confess. I'm MC Jane Doe. I did it all. I sang rap music. I used samplers. I played polkas." With tears gushing down her cheeks she cried on, "But you can't blame me! I was abused as a child. My parents made me listen to Green Day!"

"Hold it," the leader of the agents instructed. "Why didn't you tell us this before? Let her go, boys. We'll never get a conviction with such a strong defense. We're very sorry, Ms. Doe. We'll clean this mess up on our way out."

Join us again next time for the continuing adventures of MC Jane Doe, on-line polka/rap queen extraordinaire. Enjoy. ■

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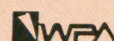
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Herbie Hancock

[We were caught off guard by the response to our June '95 interview with Herbie Hancock — specifically, by the reaction to his statement that technology “has got to be democratized. It can’t just be that all the white people and the rich blacks have computers.” One well-known artist even called us to express his outrage at what he interpreted as the racial implications in Hancock’s words. Here is a taste of the written responses we’ve received.]

I enjoyed reading your interview with Herbie Hancock. The man continues to be a creative whirlwind. But when he characterizes the commercial dance music he’s done as “a challenge” or an “exploration,” he stretches my credulity beyond the breaking point.

Kevin C. Klingler
Chatsworth, CA

Excuse me, Mr. Hancock, but did you know that there are poor white people too? Or maybe they don’t count in your Buddhist karma.

I’m getting tired of race-baiting talk about minorities who are “oppressed” because some of them are poor. If minorities were truly as oppressed as some media whores are telling us, there wouldn’t be rich blacks in this country. Of course, these clowns wouldn’t have an excuse to get in front of a television camera and tell us how evil the U.S. is if it were widely known that minorities have been making great advances in income, especially in the evil 1980s. Bill Cosby and Oprah Winfrey are richer than I probably ever will be. Black families in Queens, New York, are making, on average, the same income as middle-class white families. Isn’t that great? Isn’t the U.S. a good country to live in? I think so. So before anyone calls me a racist, I’m not. I just don’t think this country is as bad

as too many people are saying it is.

Bill Roberts
Indianapolis, IN

Being color-blind, I often stroll along Burnside Street and wonder which of these fine bag ladies are white and which are black. Wanting to spare myself accusations of slinging racial innuendo, I disdain asking them which color they are. But now my conundrum is solved. All I have to do is ask whether they own a computer. The black ones will say no, and the white ones will say yes.

Wino Jensen
“baglady@primenet.com”

I would be interested to hear Herbie’s solution to democratizing technology. Since most businesses are not in the habit of giving away product, how would this be financed? By tacking a surcharge onto computer hardware, software, and service costs? Or a form of licensing tax that white people and rich blacks would pay? Who will coordinate the collection, purchase, and distribution of the items? Will these people do it for free or will a larger and larger amount of money be expended by the organization at the expense of the people it is formed to help and the items the money is targeted for — items and help the “have-nots” might not want?

How committed is Herbie to this concept? Committed enough to contribute his *own* money, time, and promotion? Since he feels it’s such a good idea for the computer/communications industry to provide service to the have-nots, certainly he should be willing to provide his CDs to the have-nots in the same manner. My discretionary income does not allow me to purchase Herbie’s CDs; will he give them to me for free? Even if I don’t want them?

John J. Twardzik
Tampa, FL

[Hancock’s commitment was evident last May 10 when, at a press conference at the House of Blues in Los Angeles, he announced that he has created a foundation dedicated to making computers accessible to young people. Hancock expressed his interest in seeing technology

expand beyond the role of facilitating traditional types of education in order to encourage creativity, break down cultural barriers, and help spread racial tolerance.]

I must find this computer that Herbie Hancock says I have. If I can’t, I could keep working at both of my jobs and save up for one. Or I could become a Buddhist and learn more about how all white people have computers.

R.V.
Maplewood, MN

[Herbie Hancock did not reply to our invitation to respond to these letters.]

Doin’ the Time Warp

When I re-entered the music world as a player four years ago, I picked up an issue of *Keyboard* and was rather shocked to find that I was lost in about half the articles I read. It seemed that since I had dropped out in ‘82, this thing called MIDI had changed the language of electronic keyboardists. I subscribed immediately and have used you as a resource to acclimate me ever since. I’m still working out the bugs (in my analog brain, not the microprocessors), but overall I’m happy with the choices you’ve helped me make. Thank you for allowing me to base my purchases on other than salesperson hype. By the way, I’ve kept my Electrocomp and my Rhodes for old times’ sake. And I still get a laugh out of seeing Emerson win your polls after all these years.

Eric Lee Svalgard
Norwalk, CT
via CompuServe

Our New Look: Another View

I am very impressed with the illustrations in *Keyboard*. They are inventive, colorful, and inspirational. I am especially fond of illustrations by Courtney Granner, Tetsuji Yoshida, Warren Linn, Tom Lanaux, and Kirk Richard Smith. I’d love to see their work available as reprints or posters. In fact, I have Smith’s “mutant harmony” illustration [May ‘95] framed and hanging on my wall. Welcome to art director Paul Martinez, and fond farewell to Richard Leeds.

Glen Sutton
Zendrum
Atlanta, GA

Keyboard on the Internet

Keyboard System-Exclusive, our Internet Web site, is at <http://www.mfi.com/keyboard>. If you’re on AOL or CompuServe, or don’t have WWW access, you can anonymously FTP <ftp.mfi.com> in the [/pub/keyboard/patches](ftp://pub.keyboard/patches) directory.

Demo Tape Workshop

Thanks for that insightful demo tape workshop [June ‘95]. It’s great when you give readers something they can really use, especially articles that pinpoint key technical issues of songwriting and production.

One can learn a lot from major hit songs. Most hits share common elements in production, one being variety in the parts. Obviously

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We all got into music because it's fun. And that's why you're going to love the Yamaha QY300. This one small box has everything it takes to let you create the ultimate composition. Or just sing along to some accomplished accompaniment. It's powerful. It's flexible. And it's easy.

Start in the Middle. Or the End.

Anyone can use the QY300. You don't have to be a keyboardist. Or even an experienced musician.

The QY300 contains a massive database of nearly 3,100 drum, percussion, bass, guitar and keyboard phrases. And 100 different musical styles. If you're looking for accompaniment and don't have the time or inclination to play around, all you need to do is choose a chord and a style and you have a backup band hanging on your every word.

If you're a composer or producer, you'll love the extensive Play Effects. They let you work with your own phrases or make the QY300's phrases your own. Using sophisticated editing capabilities like percentage quantize, variable swing rates and gate and velocity modifications, you can completely change the attitude of a guitar part. Or a drum track. Try that with the guys in your band!

Start playing around and you'll find that 3,100 phrases suddenly turn into a whole lot more. No one knows how many phrases are actually possible with the QY300.

You can also re-harmonize phrases and patterns in real time according to any chords you play. This feature lets you instantly come

up with ideas for chord progressions or even entire songs. It's like inspiration on call.

Powerful Sequencer

Once you're happy with your phrases, put them all together with the QY300's extensive 16-track sequencer. There's plenty of room to lay down all your parts and arrange them just so. Then add music using the QY300's built-in mini-keyboard or an external MIDI keyboard. (The QY300 is entirely General MIDI and Standard MIDI File compatible.)

Eight pattern tracks, a chord track and a tempo track allow you to further fine tune your composition and give it a human

feel. No one needs to know it started in a machine.

The QY300 also uses a mixer-type interface so you can mix your tracks with precision. Pan, add reverb and adjust track volume and tuning with the ultimate control of a digital mixer.

All The Sounds Are On Board

Because it's General MIDI, you could run your sequences on external tone generators. But one of the beauties of the QY300 is that you don't have to.

The QY300 includes 128 exceptional voices and eight drum kits created with acclaimed Yamaha AWM technology. So you could even use the QY300 as a stand-alone tone generator. It features 28 note polyphony and 24-part multi-timbrality (in song mode). It also includes a digital signal processor for applying realistic reverb and echo effects.

Follow Along Easily

If you're worried about the interface, don't. This is supposed to be fun, remember. The QY300 has a huge LCD screen that shows you everything you need to see in one glance. So whether you're in the studio, on the stage or in your own back yard, you know exactly what's happening.

And the screens aren't just big. They're helpful. The QY300 will lead you along and give you access to all the information you need as you need it.

Everything Has It's Place

No other product allows you to do nearly as much as the Yamaha QY300. In one place you have a complete music production tool, a backing band and an unlimited source of inspiration. It's so fun and easy to make great music with the QY300, you may even feel a little bit guilty about it. Nah.

Introducing the "Laptop" Version

The QY300 is small enough to take to any gig. But if you're looking for the ultimate in convenience, you'll also want the exciting new Yamaha QY22. It's a completely



portable, battery powered General MIDI tone generator that gives you the same general capabilities as the QY300

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the hits demonstrate that it's okay to repeat a part, but verse and chorus patterns change just enough to keep them interesting without digressing too far from their first form. I believe that a lot of what makes a song a hit is how well the artist and production implement these points. When a writer/producer says, "Hey, we need to change that lead guitar part going into the first chorus, and change it again into the second chorus," they're seeing the whole picture and hearing how the changes might help the whole song.

This is much tougher to do than it sounds. I'll bet you those hits take months of rewriting and experimenting, not to mention loads of patience and diplomacy. Sometimes I wonder how they manage to record a tune from so many different yet similar angles. Maybe the difference between most demo tapes and a hit lies more in the consideration of these angles than in the quality of the recording equipment.

The Unknown
Atlanta, GA

Thanks for your comments on demo tapes [June '95]. Three times now I've submitted tapes with a variety of styles crafted together into one short song, like a quick medley. Although that's not my usual style, I did this because I thought it would get me credit for knowing different styles and being able to blend them. Now I see that all this time I was cutting off my own nose to spite my face. I will not make this mistake again. I only wish you had published this article three years ago.

Cliff Suttle
Los Angeles, CA

Totally Tubular

Does Mark Vail play his keyboards upside down? I doubt it, but I would suggest that next time he switches on his Ensoniq KT-88 [Keyboard Report, June '95] he make sure that black-and-white bits face upward and play his *Tubular Bells* album from the beginning. He'll then discover that the introduction of the various instruments takes place at the end of side 1, not the flip side. He may also note that Mike Oldfield does not introduce the instruments. Rather, it is the voice of the recently late but very, very great Vivian Stanshall.

Michael L. Smith
San Pedro, CA
via Internet

Sex: The Aftermath

This fellow Fred Simon [Letters, June '95] seems to enjoy pointing his reverent finger at you by creating a stink over the political correctness of *Keyboard* ads. Did he send similar letters to TV networks, newspapers, radio stations, book publishers, record labels, junk mail distributors, auto manufacturers, and those sexually devious Avon ladies? Or is he singling out *Keyboard* because most of your readers seem to go out of their way not to be as politically correct as he is?

George Mihalakis
Milpitas, CA

I love the Sydney Urshan ad! I find it purely ingenious to state that Symetrix is keeping abreast of the industry. As for sexual degradation, have you read the topical headlines of women's magazines at the checkout counter lately? As the post office says, if you don't like it, don't look at it.

Richard Millette
Sunstroke Studio
Englewood, OH

I would much rather look at a woman in her underwear than a painted metal box with knobs and an LCD screen. Thank you, Symetrix, for putting a chuckle in my day.

Duncan Stitt
Tucson, AZ

I did find the Symetrix and Sydney Urshan ads distracting. Perhaps a pair of nicely shaped quarter-notes in a Wonderbra would have been more appropriate, though a couple of inverted fermatas would have been more titillating.

Russell Landwehr
Bradford, OH

I realize that many people are used to ads with women in underclothes. No doubt some liked it, as it appeals to lustful persons. But there is reason to believe that viewing pornography leads to child molestation, rape, and other such acts. Did you see the film *Angels in the Outfield*, where the boy tells the coach if he quits swearing the angels will come? Why don't you try setting a higher standard and see if your business doesn't prosper more because of it? Remember, the Bible says that God's ears are open to the prayers of the righteous but his face is turned against them that do evil.

Joanne Dunbar
Brantwood, WI

I cannot believe that so many politically correct readers are calling Symetrix's Dyna-Squeeze ad sexist and demeaning. I have seen more provocative ads in the Sears and Venture catalogs! Also, I asked several female friends which of the two phrases makes more sense: Symetrix's claim that a bra will "gently squeeze and push up" or reader Sharon Shaheen's assertion that it should "lift and separate" [Letters, June '95]. The results: Eight out of eight agreed with Symetrix. I mean, why would you want to separate?

Patrick Aquilla
Sponge Puppet
Arlington Heights, IL

People who write to *Keyboard* to complain about a specific product by name don't realize that they're playing right into that advertiser's budget. Three products (A, B, and C) have come under fire recently for being pushed with sexist or racist ads. Product A was mentioned by name in a recent *Keyboard* Letters column seven times, Product B was named five times, and Product C three times.

Wake up! These manufacturers don't wring their hands in agony over the "bad press" they

get for their ads. They rub their hands with glee over seeing their advertising dollars pay back, three, five, or seven times in one issue alone. My solution is to call or write the offender directly and state your opinion. Don't pander to the oldest trick in advertising: insulting one's intelligence.

Doug Dickeson
Lincoln, NE
via Internet

The Sydney Urshan and Symetrix ads do exactly what good ads should do: They make people talk about them. This liberal is getting very tired of P.C. Nazis who cannot see the consequences of their tirades. If you find an ad offensive, just say so and get on with it. Anything beyond this just feeds the corporations that ran the ads.

Robert F. Vandiver
Portland, OR

I take offense at recent ads published in your magazine, especially the one from Sydney Urshan. But what equally disturbed me was your response to readers who expressed a similar concern. You said, "We're not in the business of telling advertisers what sort of imagery is appropriate to depict their products." Although on the surface this seems noble, it is entirely beside the point. No one has the right to dictate what anyone else can do. But you do have complete control over what is printed in your pages. That responsibility is yours.

If you lack the moral base to make a decision which is clearly in the best interest of your magazine and its general readership, then I feel sorry for you. But don't go around with that high-minded pap that it isn't your responsibility to judge, for you judged what was appropriate when you allowed that ad in your magazine. The responsibility falls on you, not on Sydney Urshan.

Ray Lyon
via Internet

[By exposing readers to the ideas of our advertisers, we are in fact exercising our responsibility to keep you informed. What better way is there to let you draw conclusions about particular manufacturers than by letting them speak for themselves? And don't forget, by printing your letter and others like it in previous issues, we are letting advertisers know what kind of an impact their campaigns are having among potential customers, though running a letter from Ray Lyon is no more an endorsement of his position than running any ad is an endorsement of the attitude underlying that ad. More, not less, information is the key.]

NAMM Post Mortem

I was extremely disappointed that your NAMM show story [May '95] entirely missed Panasonic's Technics line. Technics has the best digital piano on the market and quite possibly the most incredible all-inclusive sound module/sequencer. And it's brand new! Technics already has the KN2000 with 64-note polyphony and

Continued on page 142 ►

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Overture is a deep, well-thought-out notation program.***

Electronic Musician, April 1995

***You owe it to yourself and your scores to seriously
consider Overture.***

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***If you've been searching for the ideal notation
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Sound on Sound, December 1994

*Words and Music by
Dave Scoggin*

Magique, non? (Magic, isn't it?)

French Keyboards, February 1995

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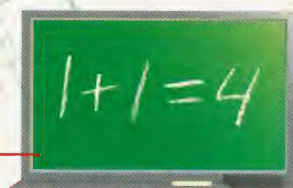
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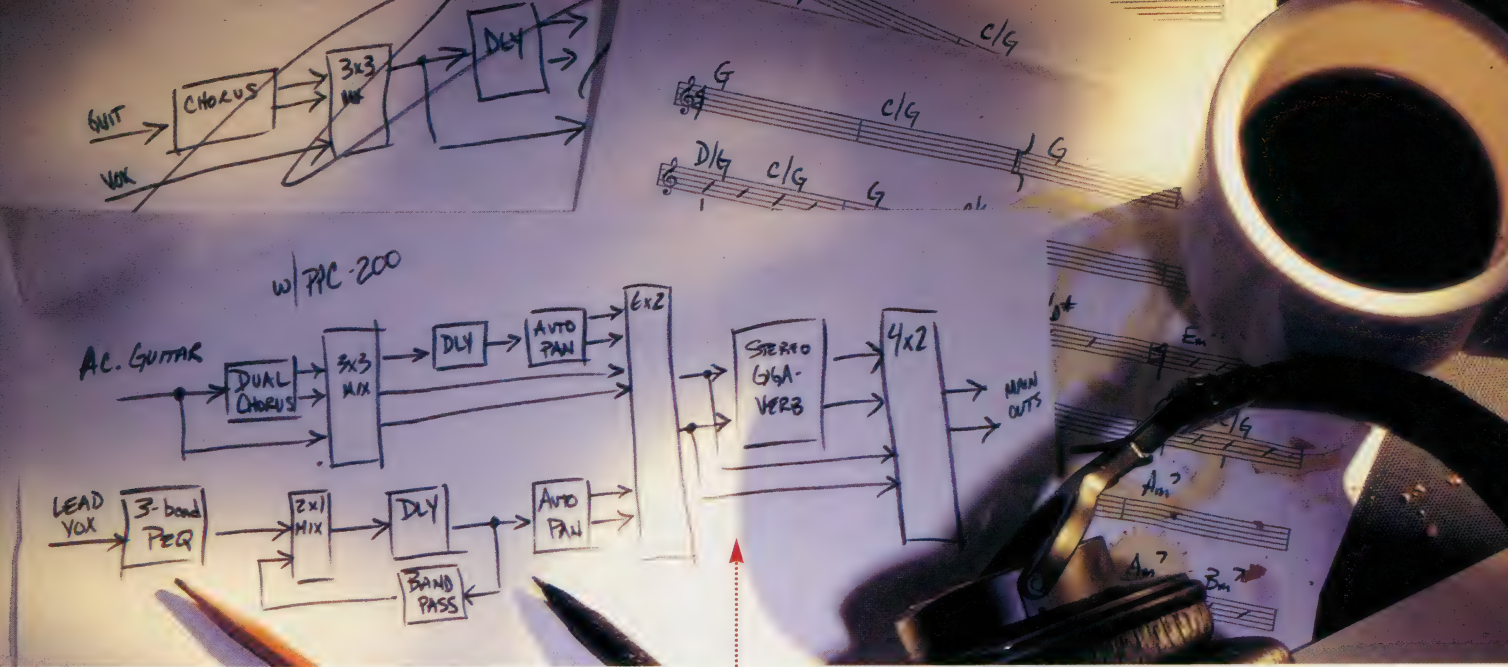
Gigaverb (the world's most flexible reverb), crystal clear sampling, multitap and modulated delays, multi-phase choruses and flangers, duckers, auto panners, 4-voice phasers, 10 separate EQs, 4 octaves of multi-voiced pitch shifting, arpeggiators, and more.

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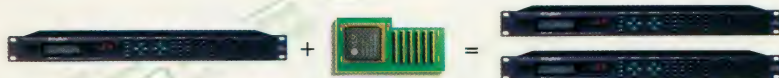
Take true stereo inputs, add four assignable outputs, and you get a lot of routing configurations. Let's see, there's stereo in, quad out; mono in, quad out; dual mono in, dual stereo out...well, you count 'em.



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capability and instant module/parameter access mean your great ideas become great music in a matter of seconds. No other machine at any price can match its flexibility. But even before you start dreaming up new sounds, you'll have to take the real first step. Drop by your nearest DigiTech dealer today.

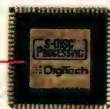


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Add the available PPC 200 card, and you'll have the power of two TSR-24S processors. Parallel processing means seamless effect changes and more.

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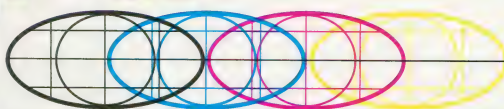
This chip defines DSP horsepower. S-DISC delivers superior sound, quiet operation and performance unmatched by anything in the market. This incredibly powerful chip was designed specifically for audio.



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Want reverb, chorus and flange?
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Redundant effects are not a problem. Link effects in any order to create algorithms, then program them in nearly limitless combinations.





KMFDM

SLAMMIN' WITH SASCHA KONIETZKO

They're a formidable sight, this mini-gang in black. The tall singer is in the middle, one foot planted on a floor monitor, mic in hand. The words are indistinct, but the message is in the delivery, which is brutal, loud, and mercilessly rhythmic. On both sides of the stage people are bashing at percussion controllers; their mallets hammer in sync, again and again, against crunch guitars and a prickly synth loop.

The Suzanne Ciani tour? Uh, nope. It's KMFDM, rocking the house at San Francisco's Trocadero Transfer and shoving its way toward notoriety after a decade of rumbling through the underground. It's enough to make the band's mastermind, Sascha Konietzko, a little . . . nervous.

"People are turning to us and saying, 'Oh, you're the new hot band,'" he admits. "And we're like, 'No, we're an old and untrendy band.' A lot of people are trying to jump on this bandwagon. So I don't know. Maybe it's time to go, because we've made our mark."

Saying that KMFDM's music makes a mark is like saying Mike Tyson's jab leaves a blemish. Since coming together in Hamburg, Germany, in '84, these guys have delivered album after album of no-nonsense industrial dance music. Their titles — *Money*, *Savage*, *Angst*, and now *Nihil* (Wax Trax!) with ditties like "Flesh," "Beast," "Terror," and "Brute" — convey a pretty clear message: There's nothing delicate about this band. That's why Konietzko pummels a customized electronic drum, rather than pick out chords on a keyboard, when there's an audience present.

"I'm not into that Rick Wakeman thing," he says. "In the first place, I'm not a keyboard player. I don't use a lot of the functions that MIDI gives you: Velocity-wise, for example, I play with the same constant touch. And that aspect that regular keyboarders love, all these pads and wonderful sounds, doesn't interest me. I'm more into the frizzly/frazzly side."

In fact, synth parts jab throughout *Nihil* and blast from DATs at KMFDM shows. Each song stems from a demo put together by Konietzko on various Mac programs, with synths and sampled guitar laid down and E-mu Pro-cussion drum sounds mutated in an Emax II by the time the band comes in to overdub. "I've got three Macs going at home. One is for [Digidesign] Pro Tools and hard disk recording. I do my sequencing in [Opcode] Studio Vision, but I can access all my audio stuff from the second drive. Then

I have a third Mac set up because my guitarist, Günter Schulz, is used to [Steinberg] Cubase."

Overdriven guitar, derived from Konietzko's samples, is the main texture on *Nihil*. "The objective was more to embed the guitars into the song structures rather than build the songs around the guitars, which is what we did on *Angst*. I was never too happy with the outcome of *Angst*, but after all, an album is only an album. I prefer *Nihil* because of the guitar aspect. Maybe I'm trendy, but that's really the focus."

Most of the synth sounds come from older gear, which tends to wind up piled in what Konietzko calls "the junk corner" in his Chicago loft. "I treat the equipment kind of bad," he says. "Sometimes I have to dig something up and I'll find all these little springs or pieces of a broken key. It's not that I smash anything deliberately; it just sort of breaks."

Although he used plenty of analog stuff on *Nihil*, including Sequential Prophet-10, Drumtraks, and Pro-One, as well as a Casio CZ-101, Konietzko actually owns only one synthesizer. "I've got a Roland JD-800 because it has one of the best varieties of sound you can find, and the overview is really nice. The knobs make it simple to use. It's very easy to download: At the end of the day I dump all my patches into a sequence. I have a [Roland] JD-990 MIDlled up so that I can manipulate it with the front controls from the 800."

That JD-800 goes through death agonies on the last track, in a grinding racket tacked onto the tail end of one full minute of silence that follows the fade on "Trust." "I was working late at night, and I had the LFOs set so they were almost cancelling out; the thing would go into silence for a couple of seconds and then start again. It sounded like weird guitars, so I recorded that. Later we did the rhythmic intro to that section and banged it together on Pro Tools."

This jolly trick may blow your speakers to bits. It also may offer a clue as to what lies ahead for the suddenly nearly respectable KMFDM. "Maybe this little wake-up call is pointing in our new direction, something more minimalistic. Less is more."

KMFDM's U.S. tour resumes this fall.

—Robert L. Doerschuk

LOUNGE PIANO COUNTDOWN

The polls are closed, the results are in, the piano's locked up, it's last call. Jimmy Rudolph, now into his sixth year behind the keys at the swank Hotel Atop the Bellevue in Philadelphia, has once again updated us on what audiences want to hear in the world of swizzle sticks and lemon twists. If anybody has the last word on this, it's Jimmy, who provides a request form for each table at his gig, keeps each one, and tabulates the results every three months. These titles cover the first quarter of '95; bear in mind that Valentine's Day comes in February and that, as Jimmy reminds us, "a certain airline" was featuring a Gershwin classic on its TV spots during that same time. Put a dollar in the tip jar and have a listen:

10. "New York, New York"
9. "Misty"
8. "Somewhere My Love"
7. "Moon River"
6. "Rhapsody in Blue"
5. "My Funny Valentine"
4. "It Had To Be You"
3. "All I Ask of You"
2. "As Time Goes By"
1. "Memory" (from *Cats*)



Internet Surfer

MUSIC NET-UCATION

Still learning the trials and tribulations of the infamous Net? Why not expand your horizons into the music education zone during that three-o'clock-in-the-morning-coffee-injected-surfing craze? Computers are becoming more commonplace in the classroom, so bone up! Those little rascals called students might become your boss someday. When surfing for educational materials, remember that Gopher will be a great resource for library accessibility, while the Web will contain thousands of inviting links to commercial and non-commercial pages.

Once in Gopher, explore Gopherspace using the Veronica search engine with music education as your search subject. You'll find tons of university class schedules and descriptions in technique, philosophy, historical issues, psychology, microcomputers, and therapy. Also found are project abstracts for current music education activities as well as information on baccalaureate and master's level degree programs. Sometimes CD-ROM and videodisc sales can pop up.

For FTP, WWW, and Gopher links to various schools of music, try Florida State University, where Douglas Stoun has organized links (<http://www.fsu.edu/school.html>) to U.C. Berkeley, Harvard University, Indiana University, Cal Arts School of Music, La Trobe University, and the impressive Web pages at the Sibelius Academy in Finland.

Other links can be found at the University of Illinois, where graduate student Tina Scott has compiled a Resources for Music Education page (<http://www.ed.uiuc.edu/EdPsy-387/Tina-Scott/project/home.html>) containing links to major journal information and various teaching preparation materials. For a huge list of music institute links, go to Yahoo (<http://www.yahoo.com/Entertainment/Music/Education/Institutes/>). Also at Yahoo you'll find gobs of musical instrument links (<http://www.yahoo.com/Entertainment/Music/Instruments/>). Check out Dogwood Way MusTech (<http://www.rbsc.com/~dogwood/>) for computer technology in the music classroom.

For the very bold, try music education searches at both Carnegie Mellon's Lycos (<http://lycos.cs.cmu.edu>) and the University of Washington's WebCrawler (<http://webcrawler.com/>) to expand your information-overloaded mind. Enjoy.

—Mark Grey



World View News

CAREER UPDATE

ONSTAGE. Paris is still buzzing over *City Life*, the latest **Steve Reich** performance work, which premiered last May. Scored for two samplers, two flutes, two oboes, two pianos, two clarinets, three percussionists, and string quartet, *City Life* moves beyond the minimalism Reich helped popularize and taps the hip-hop style with dance-oriented beats and samples of slamming doors, sirens, subways, vinyl scratching,

and other urban noises. Reich crosses the Atlantic again in September to unveil another new work, *Proverbs*, in London. . . . If you missed Bastille Day in Paris last July 14, you missed the biggest show in Europe: a **Jean-Michel Jarre** outdoor concert, staged to commemorate the 50th anniversary of UNESCO. The extravaganza was funded in part by the French government, with total expenses estimated at between four and six million dollars. Jarre is reportedly in the running to score the opening and closing cere-

monies at next year's Atlanta Olympics. . . . More than 25,000 fans danced the night away last May 6-7 at this year's U.K. Tribal Gathering. Headliners at the 17-hour event included **Moby**, **Orbital**, **The Prodigy**, **Richie Hawtin**, and **808 State**, whose hour-long set featured nine songs from their upcoming album. . . . As we went to press, jazz organ maniac **John Medeski** was putting a band together with **Marc Ribot** and Boston-based drummer **Bob Gullotti** and pushing for the opening slot on the upcoming **Pfish**

tour. . . . Emigré jazz pianist **Milcho Leviev** returned to Bulgaria last April to receive an honorary degree from the Academy of Music and Dance Art at Plovdiv "for his exceptional contribution to the development of Bulgarian jazz." Several weeks earlier, the International Academy of the Arts in Paris presented Leviev with its gold medal. . . . **Suzanne Ciani** undertook an 11-city tour of Spain last spring, with flutist **Jane Rutter**, oboist **Catherine Del Russo**, and assorted synthesizers sharing the stage. Her solo piano tour of the



Scoring with *Aeon Flux*



Insomniac fans of MTV's *Liquid Television* will be happy to know that Aeon Flux, the spidery, leather-unclad heroine of the animated series that bears her name and bares her bloodthirsty talents, is back in new half-hour segments scheduled to run at least through mid-September.

Drew Neumann, who has scored the show since it began as two-minute bits in '92, uses mainly retro synths, "particularly Waldorf gear, because you can use the big Wave to do the same kinds of effects through resynthesis and converting a sound into an oscillator that I was able to do in the past with [Digidesign] Turbosynth. The second show in the original series leaned heavily on Turbosynth sounds, like processed water from the convert-to-oscillator function so that dripping water and moving water in a bathtub became an instrument."

On the early shows Neumann also relied a lot on Morbeus, a modular analog synth he built as a Cal Arts senior in '82. "It uses E-mu components," he points out. "They had SSM evaluation boards back then: a complete set of VCOs, VCAs, and VCFs. Todor Fay [now vice-president and chief technical officer at Blue Ribbon Soundworks] figured out a way to rewire the SSM filters so they could be switched into 26 different cutoff configurations. I augmented that with Curtis filter cards and a couple of Curtis envelope generators. The whole thing is fairly compact and modelled pretty much like the ARP layout. Now that I've had my ARP 2600 modified, though, I'll be using it as kind of a replacement for the Morbeus in the new season. I had sync mods done to the 2600 oscillators, and there's

a DC offset in each oscillator. If you decouple the inputs on the mixer, you get a much better dynamic range out of the filter."

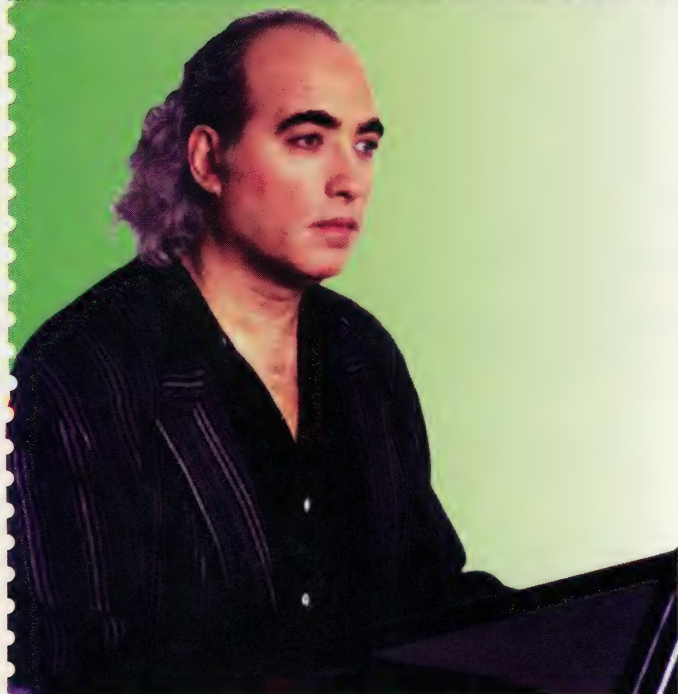
Unlike the original shows, whose only spoken sounds were grunts and gasps assembled by Neumann in Digidesign Sound Tools, the expanded *Aeon Flux* episodes include dialog. "The only English word you heard during the first couple of seasons was 'plop,'" Neumann says. "That paid off internationally, because people around the world could watch the same mix without any alteration. But I think MTV realized that it might be difficult for people to sit through a half-hour of that."

"This means that I probably won't be able to get away with as many ludicrous tempo and meter changes; I'll have to stretch things out a little longer. A lot of what I did before was in 7/4, which pulls against its own rhythm to give it a lurching character. Then there's bowed spring steel and bowed brakes on top, which adds an eerie quality; some of that was taken off of ProSonus disks, but probably 70 percent were things that I got by dragging my DAT machine around. Generally, on the new shows, I'm trying to keep the music in the low register, sort of dark and moody, and let the effects and dialog cut above that."

Neumann's handiwork can also be heard in several other cartoon series, including *Real Monsters* on Nickelodeon and *Shnookums & Meat* on Disney. But if watching a female assassin mow down dozens of pursuers is your cup of tea, take a bead on *Flux*. Plop.

—Robert L. Doerschuk

Mike Garson BACK OUTSIDE WITH DAVID BOWIE



It was a strange audition: David Bowie, a glamorously androgynous young rock star, was getting ready for his first U.S. tour. He needed a keyboard player for his band, the Spiders From Mars. Someone recommended Mike Garson, a Brooklyn-bred pianist with degrees in engineering and music, along with a résumé that included lessons with Bill Evans, Lennie Tristano, Chick Corea, and Herbie Hancock. Bowie was selling out arenas; Garson was scuffling for work in New York jazz dives. Neither had ever heard of the other. It was 1972.

"I went down to RCA, which was Bowie's label at the time, and played maybe eight bars of a tune he wrote called 'Changes,' with [guitarist] Mick Ronson standing by the piano," Garson recalls. "Ten seconds later they said, 'You have the gig.' I was getting tired of playing to empty clubs for five dollars a night, so I thought this might be fun."

With that, Garson became a Spider From Mars and, for two years, a valuable collaborator. But all good things must end, so in '75 Garson found himself back in New York's jazz netherworld. Eventually he made his way to L.A., won attention with his own band Free Flight, and released several

solo projects, including a series of movie theme arrangements for Discovery. For 20 years there wasn't a peep on his answering machine from Bowie.

Then, one day last year, the phone rang. "'Mike, this is David.' 'David who?' 'David Bowie. Let's go.' And I was off to Switzerland."

There, in a Montreux studio owned by Queen, Garson met a small group of musicians and the session co-producer, Brian Eno. For the next two weeks, these strangers got acquainted through music. For up to five hours a day they jammed with the tape rolling, with Garson at the nine-foot Hamburg Steinway. No songs were called, no charts were provided. Nobody even called a key. And much of the time, Bowie didn't sing.

"At first he'd just say 'play,' then start painting at an easel as we improvised. Eno sat two feet behind me with a Yamaha DX7 that was attached to a million boxes. Every day he'd bring in another box and make it sound like telephones ringing or all kinds of other stuff. He inspired me to come up with some wild things, very percussive and rhythmic. I drew from some of my twentieth-century repertoire: Ives, Copland, Stockhausen, Cecil Taylor sometimes, maybe some late McCoy Tyner stuff. Then some Liszt and Chopin, some Schumann occasionally."

So what *did* these guys play? Poems, of course. "We'd get to the studio every morning, and there would be a little poem sitting on the piano for each guy, which Eno had written the night before and printed out on his computer. Or there were directions that were totally science fiction, like, 'You're in a 21st-century spaceship. You're this guy, and he's got this kind of an approach to the piano.' We would try to play the roles he gave us. Since I knew we weren't playing by normal rules, we weren't playing eight-bar structures, we weren't playing blues or rock or bebop licks, I had to find some other stuff. It made us improvise absolutely in the moment."

More than 50 hours of music wound up on tape from these sessions. Much of it will be released on an avant-garde project Bowie has planned for '96. But you'll be able to hear the more accessible results on *Outside*, his Virgin release scheduled for this fall, with some vocal and piano tracks added by Bowie and Garson later at New York's Hit Factory.

The Bowie sessions proved an inspiration for Garson. "It sort of brought me back to my old days, when I was into that type of playing where you really try to improvise. You're not playing licks; you're trying to be fresh each time. That wasn't happening so much in the '40s, '50s, and '60s, when a guy could hang with one style for 20 years. I remember asking [saxophonist] Lee Konitz, 'You're still playing "What Is This Thing Called Love" after all these years?' He said, 'I've been playing it since 1948, and I'm still trying to learn it.' Well, I love that too, but these days you can't play only jazz and survive. You have to look for other creative things and, all of a sudden, you find you're enjoying doing something new."

—Robert L. Doerschuk

World View News

U.S. began in May; fall dates were being booked at press time. . . . This time it's ex-Rascal **Felix Cavaliere** and *Shindig* alumnus **Billy Preston** at the keys behind **Ringo Starr**, on the current **Allstarr Band World Tour**. . . . Jazz accordion giant **Art Van Damme** announced his retirement on his 75th birthday, April 9, at a tribute concert and banquet in Warren, Michigan. A farewell party for Van Damme will take place in mid-September in New Jersey. For details, call the American Accordionists' Association at (201) 991-2233.

ON DISC. Session funkmaster **Jason Miles** has scored *People*, a TV special scheduled to air around the world in September in honor of the United Nations' 50th anniversary. An all-star lineup took part in this project, including **Chaka Khan**, **Ivan Lins**, **Vanessa Williams**, **Peabo Bryson**, **Heavy D.**, **Grover Washington**, **Steve Lukather**, **Michael Brecker**, and **Dave Cos**. BBC and Disney co-produced the show, with animation done in Moscow. . . . Former World View correspondent **Atle Bakken** is doing the music for the first Dick Clark World Film Awards, in which winners of major movie honors, in-

cluding the Academy Awards, go head-to-head in a "world series" of international dimension. Look for it in December. . . . The next **Quincy Jones** solo album is underway, with release expected no earlier than late September. Guest artists include **Stevie Wonder** and **Chaka Khan**, with **Babyface** reportedly co-producing. . . . **Freddie Ravel** released his latest solo disc, *Soul to Soul*, in Japan last February, with **Maurice White** of **Earth, Wind & Fire** sharing production credit. It should be out in the U.S. and Europe in August. . . . **Artis Wodehouse** continues her celebration of light American repertoire on an al-

bum scheduled for release on the Pearl label soon. Titles include **Rube Bloom's** "Sapphire" and "Home-Run on the Keys," written jointly by **Zez Confrey**, **Byron Gay**, and **Babe Ruth**. . . . New York cabaret phenomenon and sometime accordionist **Phoebe Legere** is about to release her next album, *6 Flights Up*. Her publicity push began on April 22, when she shared her feelings in the nude with dozens of admirers — over AOL. **ON THE DOTTED LINE.** **MCA Records Canada** has inked a distribution agreement with the CD-ROM development firm **Shoe-string Publishers**. Their first



ROAD REPORT Barton Stevens

ON TOUR WITH BILLY RAY CYRUS



The chilly expanse of Dayton's Hara Auditorium spreads before the stage on an early April Sunday as Sly Dog, the band behind country beefcake crooner Billy Ray Cyrus, works its way through soundcheck. Keyboardist Barton Stevens glances over his right shoulder toward the large video screen suspended at the back of the stage. There, a huge, valentine-shaped heart flickers in a 4/4 throb, keeping pace with the song that launched a thousand line dances two years ago: "Achy Breaky Heart."

Song over, Stevens smiles, shrugs. "Welcome to my world."

Taking Off. Cyrus had been a fixture on the Kentucky/West Virginia/Ohio tri-state club circuit for the better part of a decade when Stevens joined the group in '89. The band was starting to expand its playing turf as Cyrus shopped his songs in Nashville. "In February '92 we were playing the Red Fox Lounge in South Point, Ohio," Stevens remembers. "The song and video for 'Achy Breaky Heart' were released in March, and we went from driving the truck to riding on the bus overnight."

Gear. When Stevens joined Cyrus, he was playing a Roland D-50, a Kurzweil K1000, and an Ensoniq Mirage, with a couple of Alesis QuadraVerbs and a Mackie mixer rounding out his setup. The Kurzweil gave up the ghost during a show in Louisiana early in the summer of '92: "I was playing the soft part of 'Some Gave All' [the title track of Cyrus's debut album on Mercury], and the Kurzweil just started going *brrrrt*. It was kind of weird." Nowadays Stevens plays a Yamaha P-100 and a Hammond Suzuki XB-2, with a Kurzweil K2000, a Korg M1R, and a Roland MKS-70 in his rack, which is kept on-stage in case he needs to make an emergency reset. "We've got a great road crew, but I still like to hook everything up myself. I'm just using stock patches, but I like to tweak the sounds to my own liking."

On Becoming a Team Player. "Six years ago I was more interested in getting to my solo and playing as fast as I could, trying to show everyone how good I was. Now, it's still fun to solo, but it's more fun to make it click as a team. We're all searching for those moments when

Left: Stevens at soundcheck with his boss, Billy Ray Cyrus. Right: Stevens's rack, top to bottom: Horizon SL-4 passive direct box, Kurzweil K2000, Korg M1R, Rane SM 82 8-channel stereo mixer, Digital Music MX-8 MIDI patchbay/processor, Future Sonics A220 stereo amp, Aphex 720 multiband peak limiter, a second SL-4, Roland MKS-70. The Future Sonics stereo amp powers Stevens's in-ear monitors. The rest of the band uses similar monitor setups, so the stage is very clean, with no monitor wedges.

everything works, when everybody is in the same groove. Those magic moments."

Biggest Headache. "We've bought every possible size of rack and configuration of casing known to man. I've got a couple of racks now that are just useless: too skinny, didn't work out, that kind of thing. I could write a book on the case needs of the touring musician."

On Playing with Billy Ray Cyrus. "A dream come true. It's been a pretty fulfilling experience. When we were recording, we got to play what we felt, from the heart. And now that we're mainly playing live, we're more solid than ever."

—David L. Swint



DON PULLEN, 1941-1995

Exactly one month before Don Pullen succumbed to lymphoma on April 22, Blue Note released the latest in a long string of inventive albums by the jazz pianist. The irony of its title — *Don Pullen. Live . . . Again* — reminds us that there's no second chance in jazz and never enough time to give great artists the appreciation they deserve.

Pullen was born in Roanoke, Virginia, on Christmas Day. His father was a preacher, his mother sang in the choir, and his cousin, Clyde "Fats" Wright, got him started on the piano. Before long he was backing his father, who also played guitar and tap-danced, at parties. Lessons with the local piano teacher began at age 11; within a few years, Pullen was playing blues gigs around town, shaping his piano and organ work along lines drawn by Ray Charles, Memphis Slim, and Ruth Brown.

After graduating with a music degree from Jocelyn T. Smith University in 1963, Pullen met the influential pianist and teacher Muhal Richard Abrams,

who introduced him to a more modern style and encouraged him to commit to doing music full-time. Pullen moved to New York in '64, working at first with R&B and funky jazz organ outfits but eventually finding a niche in the avant-garde scene through piano dates with Albert Ayler, Sunny Murray, and other innovators. In January '72 Charles Mingus met and hired Pullen. Their three-year association produced several incendiary albums and provided the last way station on Pullen's path to a solo career.

Which began with a bang: After he cut his first albums for Canada's Sackville and Italy's Horo labels, Pullen released his U.S. debut, *Tomorrow's Promises*, in '76 and won the first of two consecutive *Downbeat* awards as the "talent most deserving of wider recognition." He toured extensively in numerous formats, from solo piano to big band. His quartet album *Don't Lose Control* won the Grand Prix Du Disque De Jazz award at the Montreux Jazz Festival in 1980. The National Endowment for the Arts and the Smithsonian Institute supported Pullen's work with grants and honors. In 1990 Pullen launched the African-Brazilian Connection, whose hybrid style provided some of the hottest and most creative settings in contemporary music.

Pullen was experimenting up to the end: His final album, *Sacred Common Ground*, a fusion of jazz and Native American traditions, was recorded last March and will be released in '96.

—Robert L. Doerschuk



Roger Eno

BEAUTY IN EXCELSIS

Back in 1983, Roger Eno, his older brother Brian, and Daniel Lanois recorded an album titled *Apollo Atmospheres & Sound-*

tracks, which became a milestone in the development of ambient music. Roger wrote many of the tunes, including the mesmerizing "Always Returning." The album's success led to both Enos being invited to write the "Prophecy Theme" for David Lynch's film *Dune* in 1985.

With *Voices*, another collaboration with Brian, Roger's career was up and running. Since then it has embraced solo projects, like the chamber-oriented *Between Tides* in 1988, theater and film writing, collaborations with Bill Nelson and ex-Dream Academy oboist Kate St. John, and the odd thing with his brother.

"Brian occasionally rings me up when he wants some writing done," Roger explains. "He needed a string quartet for a German play he was doing recently, so he got me to write it. I enjoy doing that kind of thing. He was in charge of providing the ambient music behind the action, which is his brilliance."

Roger's own music is tinted by ambient ideas, as reflected by the ghostly guitar sounds, bass notes, and synth treatments echoing in the background on his new album, *Lost in Translation* (Gyroscope, dist. by Caroline). But in the foreground are short compositions whose formalism owes much to his years at the Col-

chester Institute, where he studied euphonium performance, harmony, and musical history. "A lot of my ideas come from synths, even though on this record I play the piano," he points out. "I wanted to make up a mythical band which meets every Saturday night. As they play, all these influences start spreading through the music: medieval songs, Parisian melodies, Mexican mariachi. I was going to get a band together but instead got an E-mu Proteus/2, which has lots of orchestral samples."

In his impish way, Roger is keen to point out that he can hardly program his Proteus or Korg M1 and would rather poke out an Erik Satie tune on his Ancos upright piano. "There are lots of acoustic instruments on *Lost in Translation*: guitars, both electric and acoustic, bass, mandolin, banjo. On 'Mariachi Funeral,' which sounds a bit like the Beatles go to Mexico, you can hear my pocket trumpet. I placed that track sixth because I wanted people to feel fairly safe before hearing the sombreros coming out."

Roger Eno writes most of his music in a shed at the bottom of the garden outside his country cottage in Suffolk. He describes his "sketchpad studio" as primitive, with a Fostex A-series 8-track, an 11-year-old mixer, and a Casio portable DAT recorder. Here he cut the basic tracks for *Lost in Translation*, then took the rough mixes to TapeCraft in Norfolk and, finally, Peter Gabriel's Real World studios for finishing touches. "I had a great time with Michael Brook at Peter's place," Eno notes. "For example, I did a vocal line at the beginning of the title track. Mike thought it missed the point, so he introduced echo and reverb a few

phrases in and made it increasingly misty. The guy really knows what he's up to."

Five vocal compositions, four in Latin and one a traditional folk tune, float amidst the cooling waters of ethereal keyboards on *Lost in Translation*. The Latin songs have an ecclesiastical feel, as they were penned by Walter of Flanders, a fourteenth-century heretic. "I wanted to use my voice but I didn't have any decent lyrics. But I'm half Flemish, so when I came across a book about this guy who was born in Bruges, a place I'm fond of, it all clicked. 'Domus in Nebulae' means 'house in the clouds,' 'Ne Cede Melia' means 'yield not to misfortune,' 'Quando Solus' is 'when alone.' The title of the album refers to translating these texts for my purposes but also to the old idea that saints' bodies and relics when moved are 'translated.'"

Roger Eno's new album is a pleasing blend of the strange with a typically wistful English pastoralism backed up by a love of Debussy and Delius. His keyboard technique, tinted by shades of Impressionism, enhances the mood through understatement. "While I was at college I couldn't play Liszt or Chopin, but I found that you could get a great sound out of the instrument. I had this teacher who specialized in piano sound, the attainment of a ringing quality. As long as I could get a good tone I was happy, because the music I wanted to do didn't demand virtuoso technique. I was more interested in timbre than virtuosity, so when Brian introduced me to the music of Satie I felt good because it showed me that you didn't have to be brilliant to play beautiful music."

—Mark Prendergast



World View News

collaboration, *The Cuckoo's Gift*, is a Windows- and Mac-compatible animated story narrated by Will Millar of the Irish Rovers. Future projects will feature artists signed to MCA and affiliated labels.

R.I.P. Danish accordion virtuoso **Mogens Ellegaard** died of leukemia last March 28. He is perhaps best remembered as a champion of contemporary music written for his instrument, the free bass accordion.

BULLETIN BOARD

YAMAHA PURSUES ESS SUIT.

Yamaha is taking legal action against ESS, charging the soundcard manufacturer with violating

two Yamaha FM patents. A Los Angeles federal court rejected Yamaha's request for a preliminary injunction against ESS on May 1; Yamaha has appealed this decision to the Court of Appeals for the Federal Circuit in Washington, DC. In earlier lawsuits involving these same patents, which relate to FM technology and the use of a modulation operation in synthesizing sound, Yamaha was successful in obtaining preliminary injunctions against four other soundcard manufacturers.

SCAN BOOTS UP. The Small Computers in the Arts Network will sponsor its annual symposium next Nov. 3-5 in Philadelphia's Benjamin Franklin Science Muse-

um. Highlights will include gallery for visual works, a concert, and presentations of papers. Computer musicians and artists who want to present their own work at the conference can submit a proposal no later than July 31; each proposal must include an artist's statement, discussion and copies of the papers, images, and/or music you hope to present, a résumé, and an SASE. Call (212) 674-0665 for further details, then send your proposal to SCAN '95, c/o Steven Berkowitz, 61 E. Eighth St., Ste. 229, New York, NY 10003-6494.

MUSICIANS WITH DISABILITIES.

Instrumentalists and singers, age 25 or younger, with a

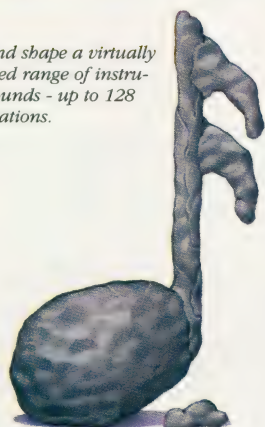
disability are invited to take part in the Panasonic Young Soloist Awards. This competition offers a \$5,000 scholarship for music study and an opportunity to perform at the Kennedy Center. If you're interested, prepare a videotape or audio cassette of your performance, write a 250-word essay on why you feel you should be selected, and get your application materials by writing Very Special Arts, Young Soloists Program, Education Office, John F. Kennedy Center for the Performing Arts, Washington, DC 20566. You can also call (800) 933-8721 or TDD (202) 737-0645. All applications must be received by Sept. 15. ■

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interFACE

BY MICHAEL MARANS

Keynotes



These days most samplers come in rack-mount configurations, but Ensoniq bucks the trend with the introduction of the **ASR-88** (\$4,495), which combines an ASR-10 sampling engine (stereo sampling, 62 effects algorithms, 16-track sequencing, and two-track audio recording), with an 88-note weighted action keyboard (the same one used in the com-

pany's KT-88 — see Keyboard Report, June '95). The instrument comes fully loaded with 16Mb of RAM, features a built-in SCSI interface, and is bundled with a double-speed CD-ROM drive and two CD-ROM sound library disks. If you're into using the unit at home and want everything to look *just* so, check out the optional P-10 wood keyboard stand (price to be announced).



When is half as much sampler still likely to be more than enough? When it's an **e-64 Digital Sampling System** (\$3,295) from E-mu Systems. This somewhat scaled-back version (as in half the polyphony and half the memory) of the company's flagship EIV offers 64-note polyphony, up to 64Mb of RAM, eight polyphonic outputs, a graphic icon-based user interface, 18-bit D/A, AES/EBU I/O, dual SCSI ports, resample while playing, and compatibility with the EIV, EIIIx, Emax II, and Akai S1000/1100 sound library.

Peavey has released an enhanced version of their DPM SP sample playback module called the **SP+** (\$1,299.99). The new rack-mount unit features 32-note polyphony, 2Mb RAM expandable to 64Mb, on-board multi-effects, four polyphonic outputs, dual SCSI connectors, and compatibility with existing DPM sound disks and CD-ROMs.



Digital Musings



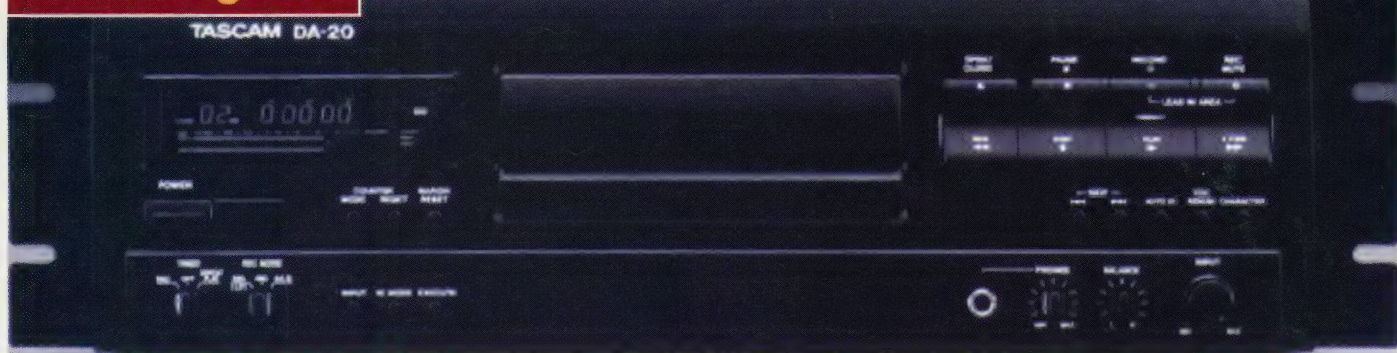
Session 2.0 (\$395) from Digidesign is a software application that provides multitrack digital recording, editing, and mixing on Apple Power Macintosh computers without requiring any additional audio hardware. The system supports from four to 12 tracks of simultaneous 16-bit 44.1/48kHz playback (dependent on hardware configuration), import/export of SDII, AIFF, .WAV, QuickTime audio, and Macintosh System 7 sound resource file formats, and OMS 2.0, for synchronizing audio playback with OMS-compatible MIDI sequencers. Other features include parametric EQ, frame-accurate synchronization to QuickTime movies, sample-rate and bit-resolution conversion, graphic editing of volume and pan automation, user-definable crossfades, and compatibility with Digidesign's Audiomedia II and Sound Tools II digital audio systems. The software will be bundled free with AudioMedia II systems for the first three months of its release; a Windows version is planned for later this year.

By the way, when we first announced Session 2.0 in our Musik Messe report (June '95), we ran a picture of what was supposed to be one of its screens. Due to a couple of logistical nightmares, the wrong shot made it to print. The correct screen is presented here.

Steinberg is jumping into the software plug-in arena with the introduction of two TDM modules. The first, **The Virtual Effects Rack** (\$399) is a set of five plug-ins, including PlateRunner stereo reverb, Stereo Wizard stereo enhancer, Pandora stereo autopanner, Hallelujah Chorus stereo chorus, and Y-Cables stereo mixer/merger/patcher. The second, dubbed **DeClicker** (\$999), helps eliminate undesirable snaps, crackles, and pops from your audio files — just the thing for cleaning up old recordings and keeping peace at the breakfast table.

RADAR View is a new graphic software interface that runs on the Otari RADAR hard disk recording system. The program, which is free to registered owners, allows viewing of 24 input/output meters, SMPTE time, audio tracks with multi-level zoom, digital audio routing, project names and associated markers, and a variety of status indicators, such as sample rate, clock source, vari-speed value, and crossfades. Also from Otari: the **UFC-24** (\$1,995) 24-track digital audio format converter. Supported formats include PD, S/PDIF, ADAT, and TDIF-1. AES/EBU support is available as an option.

Recording Arts



The price you'll have to pay for a professional DAT recorder has been knocked down considerably with the release of Tascam's new **DA-20 DAT Recorder** (\$999). The rack-mount unit features long play/record mode, S/PDIF I/O, and a wireless remote. A long play/record mode (32kHz) lets you get up to four hours of material on a single tape.

Also from Tascam: the **2 Track MD Recorder** (price not available at press time), a random access recording system based on the Sony Mini Disk (MD) format. Features include up to 74 minutes of stereo recording per disk, jog wheel, move/insert/combine editing, XLR and RCA balanced inputs and outputs, AES/EBU and S/PDIF I/O, and an RS-232 interface.



Mackie has released the **LM-3204E 16 Stereo Channel Line Mixer Expander** (\$899), designed for use with the LM-3204 mixer. Each LM-3204E offers 16 channel strips (for 32 inputs) and four stereo aux returns; up to four expanders can be daisy-chained.

Project X, from RSP Technologies, is an all-digital mixing console with direct output capabilities for Alesis ADAT, Tascam DA-88, and AES/EBU. The 32x16 desk (expandable to 64x16) features 100mm faders, six groups with eight auxiliary sends, and dynamic automation; \$20,000-\$40,000, depending on configuration.

Software

InVision Interactive, long known as a provider of sampler libraries on CD-ROM, has taken a bit of a left turn and released **CyberSound FX** (\$129), a software plug-in (Mac) for Adobe Premier. The program features an assortment of DSP effects for processing audio files, including reverb, delay, echo, EQ, tremolo, chorus, phase, flange, pitch-shift, and wah. Compression and normalization utilities are also provided.

Passport Designs has released **Master Tracks Pro 6.0** (\$149; upgrade from 4.0, \$49), a MIDI sequencer long favored for its ease of use. The Windows version now features support for up to 256 MIDI channels, graphic display of velocity, "ghost notes" for easier, more detailed editing, MIDI Bank Select messages, and support for Roland GS format synths. The Mac version offers OMS compatibility, support for the QuickTime 2.0 synthesizer and Roland GS format synths, MIDI Machine Control, MIDI Bank Select, and assignable faders with recordable automation.

Lyruss, makers of the **G-Vox MIDI guitar system**, and Twelve Tone Systems, makers of the popular **Cakewalk MIDI sequencing software**, have announced that Lyruss's G-Vox Bridge software, which allows notes on a G-Vox equipped guitar to be recorded into a PC, will soon be compatible with all software products from Twelve Tone. The idea is that guitarists will now be able to input parts directly into Cakewalk via the G-Vox system. Plans are in the works to release a G-Vox Bridge/Cakewalk Express bundle for \$129.

Recordable CD



Optical Media International (OMI) announced Mac and Windows versions of its **QuickTopix CD Recording System** (\$1,995), which features the OMR120 double-speed CD recorder and QuickTopix 2.0 CD recording software. The system supports mult-session recording, Red Book audio, data, mixed mode, asynchronous I/O, and CD simulation in software. If you're into rolling your own from start to finish, the company is also now offering the Colorscribe 6000 CD Recordable printer (\$2,995), a professional CD labeling system that provides up to 16 million colors.

DynaTek is now shipping the **CDM 200 CD-ROM recording system** (\$1,695) for Mac and Windows. The system comes complete with an external SCSI-based double-speed CD recorder, all necessary cables, a blank disc, and DiscMaster, DynaTek's recording software. DiscMaster features an easy-to-use drag-and-drop interface for building directory structures and organizing data. Supported file formats include CDDA, CD-ROM, CD-ROM+CDDA, CD-ROM XA, CDI, and PhotoCD.

Pinnacle Micro has reduced the prices on their **RCD-1000 CD** recording systems by \$300 each. The Mac version now retails at \$1,695 and the Windows version for \$1,895. Blank media has also been reduced from \$29 per disk to \$19, with quantity pricing available.

When Only the Best Will Do

Running long microphone cables can be detrimental to your sound — even when you're using high-quality, low-impedance mics and cables. The **Paintpot dual-channel preamp** (\$2,895) from Crookwood is a high-end solution. You position the Paintpot right at the source, plug your mics into it, then rely on its precision, no-compromise circuitry to deliver ultra clean, crisp signal — at line level — to your console. Also available is the **Control Pot** (\$1,495), a remote device that lets you digitally control up to 16 Paintpots.



More Power To Ya

The **Model PC100R Phone Director** (\$79.95) from Newpoint is the perfect item for anyone who relies on their computer, fax, modem, and so on for their day-to-day existence, but who finds themselves away from the office from time to time. You need not let distance keep you out of touch — this handy gadget allows remote power-up/down control over up to seven devices, whether from across town or from the other side of the world. The unit also offers computer-grade surge protection and modem/fax protection (from surges on telephone lines). Just think, now you can access your work 24 hours a day. . . .

The Lauriston Report

Microsoft Ships "Preview" OS. In April, Microsoft shipped a "preview" edition of Windows 95 to 400,000 volunteers who forked over \$35 each for the privilege. Some press reports have made a big deal about various bugs in the preview, but in my opinion they were no more than you'd expect for a product at least five months away from release. I think Microsoft will probably make its August ship date, so by the time you read this the zillion-dollar hype campaign should be starting to strain credibility.

Power Computing's Mac Clones. Assuming the company hit no glitches while this magazine was at the printer's, by now Power Computing should be shipping a full range of Mac clones. The mail-order-only company's first models use 80, 100, and 110MHz PowerPC 601 CPUs and come with a 256k L2 cache and a high-performance video board with 2Mb VRAM (upgradable to 4Mb). Power Computing will give customers a wide choice of drives from 350Mb to 9Gb, with similar flexibility in populating the systems' eight SIMM sockets, and a choice of PC-style desktop or tower cases, at prices 10 to 20% lower than comparable Apple models. The first models will sport three or more NuBus slots, with PCI models coming later. You can reach Power Computing at (800) 999-7279 or (512) 258-1350.

Internet Gets Real-Time Audio. Ever browsed one of those music archives on the World Wide Web? At least at modem speeds, there's an exasperatingly long delay after you click on the sound icon before you hear anything, since your computer has to download the whole

file before it can start playing. That's particularly frustrating when the file turns out to be something you don't want to hear anyway.

Progressive Networks' new Real Audio tools replace annoying delays with instant gratification. By using various compression tricks and a proprietary player, the company delivers audio as a constant stream of data, so it can start playback as soon as it receives the first byte. Check it out at www.realaudio.com, where you can download the free player and get information about Real Audio tools for building real-time into your own Web site.

Rumors of Mac's Death Greatly Exaggerated. A couple of months ago (that is, as we went to press), the Dataquest market research firm released a report projecting that over the next five years Windows will gather so much momentum that the Mac's market will fall below 5%. With such a small share, the report claimed, developers will not have sufficient incentive to write Mac apps, and the platform will fade away.

Apple and the Mac-centered press quickly dismissed the claims, suggesting that clones, strong sales in the fast-growing home office and small business categories, and other factors will instead increase the Mac's share. What got lost in the shuffle was that while Dataquest projected the Mac's *share* of the market will drop, the firm expects the total computer market to grow so fast that total Mac OS sales in 1999 will be almost 11 million, twice what they were last year. A Mac market with that many potential customers will be attractive to developers no matter how much larger the Windows market might be. —Robert Lauriston

Net News

Symbolic Sound (makers of the Kyma computer-based sound synthesis/processing system) now have their *Eighth Nerve* newsletter available on the web at <http://www.prairienet.org/arts/symbolic/eighth.html>.

Applied Research and Technology (ART) can now be found on *Keyboard* columnist Craig Anderton's Sound Studio & Stage (SSS) forum on America On Line. Look for them under **ART/Musician Interface**.

Digital Domain, a CD mastering house, has a home page full of useful information about mastering CDs. They can be found at <http://www.panix.com/~bobkatz>.

Sound Bytes

3D Sounds: *The Wave Bank* features 2,000 (640Mb) 16-bit 44.1kHz .WAV files for use with Windows compatible sound cards. Instruments include analog and digital synths, basses, rock, jazz, dance, rap, and ethnic drums, brass, strings, woodwinds, pianos, organs, and more. CD-ROM, \$39.

Drumtrax: *The Original Library, Version 2* features over 12,000 measures of drum patterns stored in Standard MIDI File format. Musical styles include alternative, blues, country, dance, pop, hard rock, hip hop, Latin, jazz, R & B, rap, and world. Four disk set, multiple formats, \$149. *World Trax* features over 2,400 measures of drum and percussion grooves from around the world, including Egyptian folk rhythms, Native American drums, Jamaican reggae, Caribbean calypso, African talking drums, and more. Two disk set, multiple formats, \$69.

Patchman Music: *Volume 1* for Yamaha SY55/TG55 contains 62 patches designed for wind controller use. Includes tenor, bari, and soprano sax, flute, trumpet, brass ensemble, analog brass and lead, and two GM drum kits. Mac self-loader, Opcode (Mac), Mac or PC SMF, \$39.95 plus \$2 shipping. *Volume 2* for Korg T1/2/3 contains 100 programs and 100 combinations designed for wind controller use. Instruments include acoustic winds and strings, leads, analog basses, organs, synths, and sound

effects. WX11 and WindJamm'r users will need to map breath controller data to aftertouch. T-series floppy disk, \$39.95 plus \$2 shipping. *Volume 1* for Roland JV-80/880 contains 64 patches, 16 performances, and one GM rhythm setup of "acoustic essentials." *Volume 2* contains 64 patches, 16 performances, and one GM rhythm setup of "analog emulations." Opcode (Mac) or SMF (Mac or PC), \$29.95 plus \$2 shipping per volume. Foreign orders add \$10.

Flash Points

Aquila systems: **MRX1 wireless MIDI system** (\$799). Features eight selectable frequencies and an operating range of up to 75 feet, with up to 300 feet possible in line-of-sight applications.

Furman Sound: **C-128 compressor/limiter** (\$269). Features compression ratios from 2:1 to 50:1, attack time adjustment from 0.05ms to 50ms, and a de-essing mode.

Lexicon: **Dual FX Algorithm card** for the PCM-80 processor (\$249.95). Adds 25 new algorithms, including five types of stereo reverb and five types of stereo multi-effects. A built-in digital submixer allows easy management of complex effects routings.

Electro-Voice: **MS2500H true-diversity wireless microphone system** (\$900). This handheld system features a S/N ratio of 105dB, the N/DYM N/D757B mic, and both balanced and unbalanced inputs. **MS2500B** backpack system (receiver/transmitter only), \$770; **MS2500B/100** with CO100EX mic, \$900; **MS2500B/200** with CS200EX mic, \$940; **MS2500B/HM** with headset mic, \$960.

PreSonus: **DCP-8 eight-channel audio dynamics processor** (\$1,495). Features eight compressor/limiters, eight noise gates, eight mutes, and eight automated level channels, all controllable via MIDI.

QSC Audio Products: **PowerLight amplifier series**. 1.0, 210 watts: \$1,298. 1.4, 325 watts: \$1,598. 1.8, 450 watts, \$1,998.

Samick: **SPM 4/4 dual-powered four-channel MOS-FET rack-mount mixer** (\$650). Offers built-in echo, 100 watts per side amplification, balanced XLR inputs, three-band EQ per channel, and aux and tape outs with two-band EQ.

Peavey: **Tube Fex MIDI controllable tube preamp** (\$899.99). Features pre and post gain, bass, mid, and treble EQ, and two 12AX7 tubes. Four tube settings are provided: Clean, Crunch, Lead, and Ultra.

Updates & Options

Kurzweil: The **MicroPiano** half-rack piano module (\$499) is now being bundled with PG Music's **Pianist** software (Windows, Mac), a library of over 70 piano favorites, plus a music trivia game, a music dictionary, and on-screen composer biographies.

Optical Media International (OMI): Version 1.5 of Disc-To-Disk audio capture software adds support for NEC 4x CD-ROM drives, Toshiba drives, and the Plextor 6-Plex 6x drive. A "split" option has also been added, allowing files to be captured in a format ready for editing in Digidesign Sound Designer/Pro Tools. \$199.

Sonic Foundry: Sound Forge for 32 Bit Windows provides compatibility for the sample editing program with Windows NT, Windows 95, and Win32s operating systems. \$595.

Manufacturer Contacts

3D Sounds: Box 22065, 50 Westmount Rd., Waterloo, Ontario, Canada N2L 6J7. (519) 747-0282.

Aquila Systems: ASI West, 230 Madison Ave., San Bruno, CA 94066. (800) 386-4554; fax (415) 588-2851.

Crookwood: (U.S.) Planet Audio, 80 Virginia Ln., Santa Barbara, CA 93108. (805) 969-3482; fax (805) 969-6223. (Europe) The Old Police House, Station Hill, Cookham, Berks SL6 9BS, England. 628 528 026; fax 628 531 959.

Digidesign: 1360 Willow Rd., Menlo Park, CA 94025. (415) 688-0600; fax (415) 327-0777.

DrumTrax: 51 Pleasant St., Ste. 218, Malden, MA 02148. (508) 977-0570; fax (508) 977-0809.

DynaTek: 200 Bluewater Rd., Bedford, Nova Scotia, Canada B4B 1G9. (902) 832-3000; fax (902) 832-3010.

Electro-Voice: 600 Cecil St., Buchanan, MI 49107. (616) 695-6831.

E-mu Systems: 1600 Green Hills Rd., Box 660015, Scotts Valley, CA 95067-0015. (408) 438-1921; fax (408) 438-8612.

Ensoniq: 155 Great Valley Parkway, Malvern, PA 19355. (610) 647-3930; fax (610) 647-8908.

Furman Sound: 30 Rich St., Greenbrae, CA 94904.

(415) 927-1225; fax (415) 927-4548.

InVision Interactive: 2445 Faber Place, Ste. 102, Palo Alto, CA 94303-3316. (415) 812-7380; fax (415) 812-7386.

Kurzweil/Young Chang America: 13336 Alondra Blvd., Cerritos, CA 90703. (310) 926-3200; fax (310) 404-0748.

Lexicon: 100 Beaver St., Waltham, MA 02154. (617) 736-0300; fax (617) 891-0340.

Lyrrus: 35 N. 3rd St., Philadelphia, PA 19106. (215) 922-0880; fax (215) 922-7230.

Mackie Designs: 16220 Wood-Red Rd. N.E., Woodinville, WA 98072. (800) 258-6883, (206) 488-6843; fax (206) 487-4337.

Newpoint: 6370 Nancy Ridge Dr., San Diego, CA 92121-3212. (619) 677-5700; fax (619) 453-7569.

Optical Media International (OMI): 180 Knowles Dr., Los Gatos, CA 95030. (800) 347-2664, (408) 376-3511; fax (408) 375-3519.

Otari: 378 Vintage Park Dr., Foster City, CA 94404. (415) 341-5900; fax (415) 341-7200.

Passport Designs: 100 Stone Pine Rd., Half Moon Bay, CA 94019. (415) 726-0280; fax (415) 726-2254.

Patchman Music: 2043 Mars Ave., Lakewood, OH 44107. (216) 221-8887.

Peavey: Box 2898, Meridian, MS 39302-2898. (601) 483-5365; fax (601) 486-1172.

Pinnacle Micro: 19 Technology, Irvine, CA 92718. (714) 727-3300; fax (714) 727-1913.

PreSonus: Box 84008, Baton Rouge, LA 70884. (504) 592-9393, (818) 964-4700; fax (818) 964-8898.

QSC Audio Products: 1675 MacArthur Blvd., Costa Mesa, CA 92626. (714) 754-6175; fax (714) 754-6174.

RSP Technologies: 2870 Technology Dr., Rochester Hills, MI 48309. (810) 853-3055; fax (810) 853-5937.

Samick: 18521 Railroad St., City of Industry, CA 91748. (800) 592-9393, (818) 964-4091; fax (818) 964-8898.

Sonic Foundry: 100 S. Baldwin St., Ste. 204, Madison, WI 53703. (608) 256-3133; fax (608) 256-6689.

Steinberg: (U.S.) 9312 Deering Ave., Chatsworth, CA 91311-5857. (818) 993-4091; fax (818) 993-4161. (Europe) Eiffestrasse 596, D-20537 Hamburg, Germany. 040-21 15 94; fax 040-21 15 98.

Tascam: 7733 Telegraph Rd., Montebello, CA 90640. (213) 726-0303; fax (213) 727-7656.

Twelve Tone Systems: 44 Pleasant St., Box 760, Watertown, MA 02272. (617) 926-2480; fax (617) 924-6657.

UNTIL OMAR, FRANK AND JIMMY TOLD US ABOUT OUR SERVO AMPS, WE HAD NO IDEA HOW GREAT THEY SOUNDED IN THE STUDIO.

THE SAMSON MARKETING GUYS GET HIPPED TO THE NEW SERVO 500.

Just when we were sitting around trying to figure out why our Servo amps were selling so well, the phone rang.

"Omar Hakim is on line one," our receptionist cooed. "Shall I put him through?"

"If you don't, you're toast," we responded. "He's only the hippest drummer-composer-producer in the western hemisphere!"

"Omar, my man, what's up?"



"Uh...guys, just wanted to let you know how impressed I am with the Servo 500. It's really transparent, with lots of detail in the midrange and top end. And there's always plenty of headroom."

While we were recovering from Omar's comments, the intercom kicked in again. "Frank Aversa on line two."

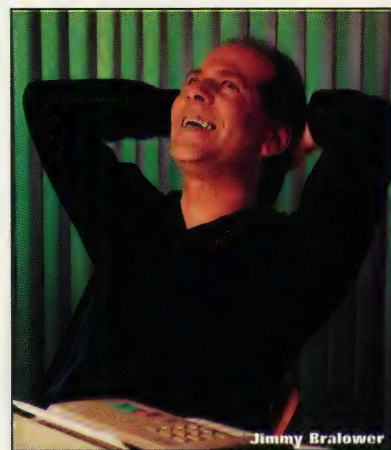
"What's the deal?" we wondered. "Frank's one of the hottest producers in the biz — he's done everything from the Spin Doctors to Burger King and Budweiser."



"I need another Servo 500, fellas," Frank said. "I already have seven, but I can't get enough of these. They sound so musical. Reminiscent of a tube amp, really smooth."

At that point, it was beginning to smell like a setup. "All right, which one of those engineering geniuses is pulling our chain now?" Just then, Sparky the marketing assistant flew into the room.

"Jimmy Bralower just faxed us about the Servo 500! Check it out: 'It really made my system come to life. I never realized my monitors could sound this good.'"



"Get outta here," we shot back, "this is too much. Jimmy's worked with people like Winwood, Clapton, and Cyndi Lauper — he even co-wrote Celine Dion's hit single, 'Misled'!"

SOUNDS GOOD, BUT WILL ANYBODY BELIEVE IT?

At this point, Sparky piped up, "Hey, I've got a *way* cool idea. Why don't we use these guys in an endorsement ad for Servo? What better way to tell people how great these amps sound."

"Never work, Sparko. Nobody will believe you can *hear* the difference in a power amp — unless your name is Fido," we laughed.

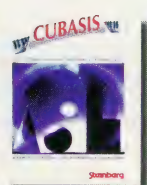
"Your loss, guys," he said on his way out the door. "Doesn't matter to me anymore. I just got a great offer from this new dinosaur theme park in Tasmania."



SAMSON AUDIO

If you want *our* side of the story about the Servo 500, Servo 240 and Servo 150 power amps and the growing Samson Audio line, please call us at (516) 364-2244, fax (516) 364-3888 or write to us at: Samson Technologies Corp., P.O. Box 9031, Syosset, NY 11791-9031 © 1995 SAMSON

SEVEN WINDOWS SEQUENCERS UNDER \$100



Amazingly powerful software —
as long as the program you buy matches your needs

No, don't make me write that same lead paragraph again! Give me a minute — I'll scrape the bottom of my shoe for a fresh metaphor, rack my befuddled brain for some compelling insight. I know, I've got it: I'll unveil a whole new paradigm shift!

Uhh, er, um. . . . (Sound of drumming fingertips.)

Sorry; there's no escaping the truth. The truth is, the newer Windows sequencers offer an astonishing amount of MIDI recording and editing power at a surprisingly modest cost. There, I said it. That's the lead. They can take me out behind the barn and shoot me now.

What kind of power are we talking about? You crave

THE ENVELOPE, PLEASE. . .

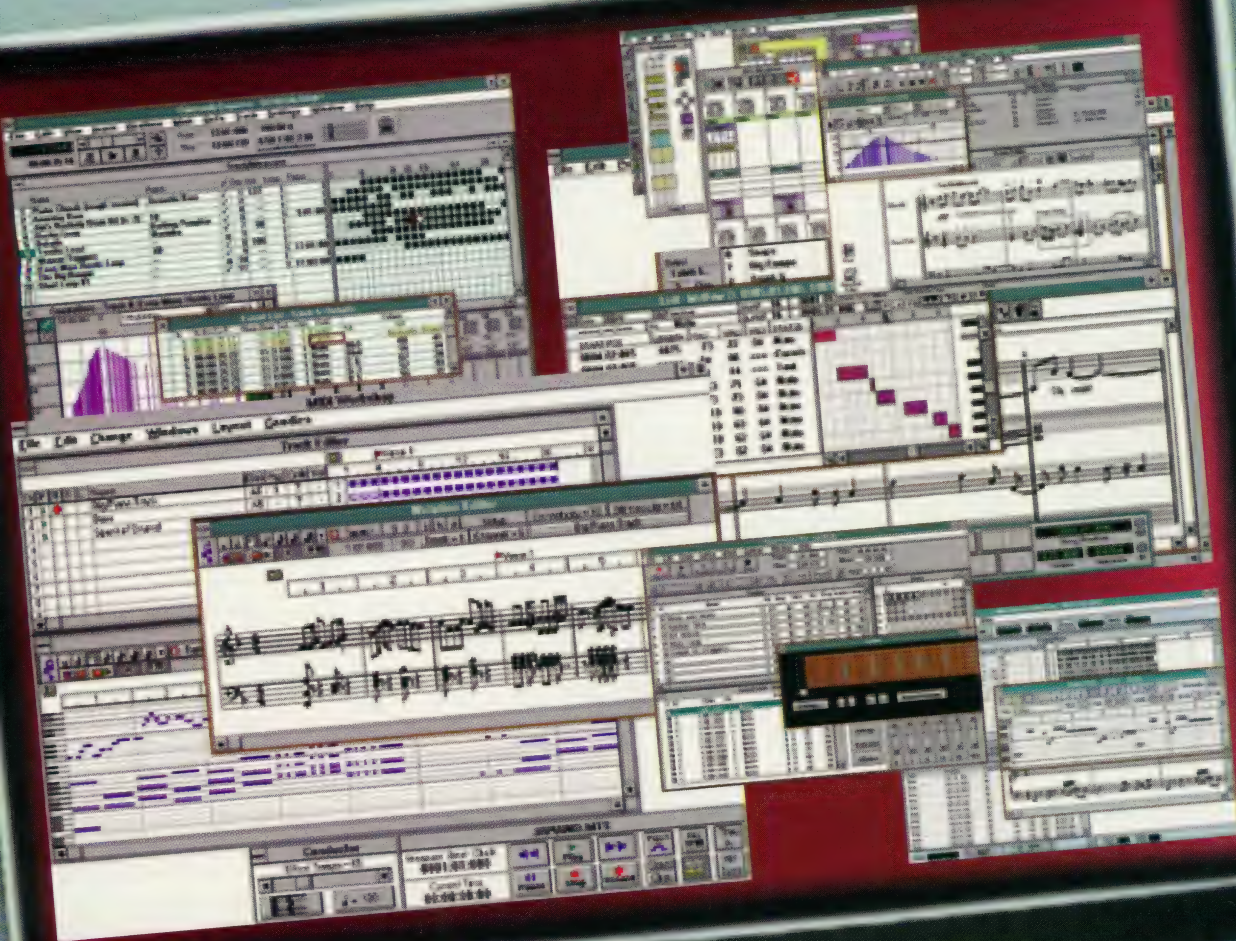
- ☆ **Best Overall:** Cubasis/Cakewalk Express (tie)
- ☆ **Best Notation:** QuickScore Professional
- ☆ **Best Timing Resolution:** QuickScore Professional
- ☆ **Best Quantization:** MIDI Workshop
- ☆ **Best Synchronization:** Power Tracks Pro
- ☆ **Best Alternate Interface:** Power Chords Debut

a program that will print scores and parts complete with dynamic markings, fingerings, and lyrics? Not a problem. You want to be able to enter chords from an on-screen guitar fretboard and then add the strumming rhythms later? Not a problem. You

want a program that will tighten up your sloppy timing without imposing a rigid robotic rhythm on every note? Not a problem. You want to be able to draw pitch-bends with the mouse? Not a problem.

Of course, for less than a hundred bucks you're not going to find *one* program that will do all of the above. We've just listed key features from four *different*

BY JIM AIKIN
ILLUSTRATION MWM



under-\$100 sequencers. So before you take the plunge, take the time to read the profiles below. While not as detailed as full-bore Keyboard Reports, these reviews are based on a good deal of hands-on time with each piece of software. Rather than compare strictly feature-by-feature across all seven products, we tried to ask ourselves, "Which features of *this* sequencer are the strongest, and which are the weakest? Which features might induce somebody to actually buy a copy, or dissuade them from buying?" (You'll also find a chart with some direct comparisons on page 29.)

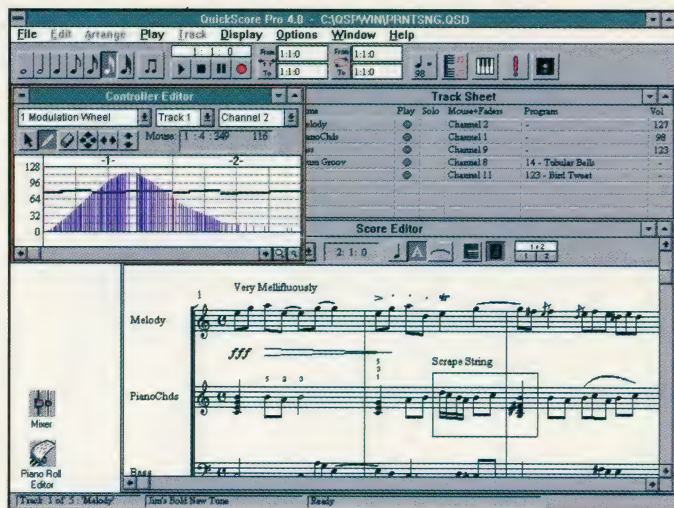
If you already own and use a sequencer, should you care? Maybe yes. Admittedly, switching from one sequencer to another is not something many musicians would do on a whim. Learning a new set of commands can be a test of patience, and special features that will make or break your music may not exist on the new sequencer. Then there's the question of how much trouble it will be to transfer your existing song files to the new sequencer's file format.

All the same, there are good reasons why some people consider switching. You may have started your sequencing career using the software bundled with a soundcard, and you may have discovered by now that . . . well, let's be charitable: You may have discovered a few reasons why that particular software is being given away as a freebie. You may still be using a DOS sequencer, which means exiting Windows to play music, and possibly forgoing the pleasures of mouse navigation. You may need features like notation printout that are missing on many earlier-generation programs.

Or maybe you've never tried MIDI sequencing before. (If some of the terms in this article are new to you, turn to "On-Line Help" on page 34.) Now that you've got a soundcard with a MIDI interface, you'd like to check it out, but not if it costs an arm and a leg. If you're rich enough, or serious enough about music, you could spend \$500 or more on a sequencer that has every feature known to the human mind (and then some). But maybe there are more affordable alternatives that will do everything you need (and then some).

In order to make this story manageable, we drew the line at the \$100 mark, which excluded some other Windows sequencers that you might want to look into, notably Big Noise Software's SeqMax Presto! (\$124.95 suggested retail price), Twelve Tone Systems' CakeWalk Home Studio (\$129 retail), and Jump Software's Concertware (\$149 retail). Softonics markets an under-\$100 Windows sequencer called Winsong, but they didn't respond to repeated requests for a review copy. We also ignored the DOS side of the PC world, which includes three budget-priced sequencers that we know of: Bebop Systems' Limelight (\$99.95), Twelve Tone's CakeWalk DOS 5.0 (\$99), and Voyetra's Sequencer Plus Classic (\$99.95).

All Windows sequencers use Windows' standard MIDI drivers for input and output, so you should have no trouble using them with any standard soundcard or other MIDI interface, assuming that you use the driver installation routines that come with the hardware, and that the installation works properly. We used a Turtle Beach Tahiti card for MIDI in/out in our research, and all of the sequencers that we tried worked perfectly when we selected the standard Tahiti MIDI driver.



Dr. T's QuickScore Professional features WYSIWYG notation (the laser-printed version of the music shown above appears on page 30), graphic controller editing (upper left), and a track sheet that displays GM program names (upper right).

QuickScore is limited to 16 tracks, and can only use a single MIDI output port. This gives you less room for storing alternate takes than any of the other sequencers in this round-up (except Power Chords Pro, which handles its data differently), and may present problems for users with larger MIDI rigs. On the other hand, each of QuickScore's tracks can include data on all 16 MIDI channels, so each track can do more musical work than on some programs.

QuickScore's piano-roll editor is fairly standard in design. It supports both horizontal and vertical zooming. When dragging notes left or right, you can choose whether to "snap" them to an exact rhythm value, or whether to drag them freely. As handy as this is for making quick edits, QuickScore's handling of rhythms is a bit primitive: Only the standard quantization values (eighths, sixteenths, triplets, etc.) are supported, and there's no swing quantization.

You can select a region for editing, either in the score or the piano roll, by dragging across it with the mouse. This automatically opens up the drop-down edit menu, where you can select transposition, quantization, duration editing, or rechannelizing, among other options. Double-click on a single note to select it, and the same menu is available. QuickScore has no event list, so fiddling with durations or velocities one at a time is bound to be slow, but velocities can be displayed in the graphic control edit window and drawn with the mouse. The controller window has several other nifty utilities, including the ability to interpolate between start and end values (for smooth crescendos, among other tricks) and the ability to thicken, thin, or scale the data up or down by a percentage.

The on-screen mixer can be used to record MIDI controller data, pitch-bends, channel aftertouch, or tempo changes in real time. It can also group faders for smooth fade-ins and fade-outs of a whole tune or section. It can even take a "snapshot," storing the current values of the faders for instant recall of a mix. These capabilities, to our way of thinking, more than make up for the fact that General MIDI-specific data types such as reverb and chorus depth are not explicitly supported with their own dedicated screen controls.

Recording and playback are a little clumsy in QuickScore, primarily because it lacks a rewind button. Nor does clicking twice on the stop button return you to the beginning of the tune. To rewind to the top of the tune, you must either open a pop-up box, type a '1,' and hit RETURN, hit the HOME key, or use the scroll bar at the bottom of one of the edit windows. We also noticed that when we stopped playback in the middle of a pitch-bend, QuickScore wasn't smart enough to center the pitch control data. The next time we started



Dr. T's QuickScore Professional 4.0 (\$69.95)

If you need a strong set of basic notation utilities, but you don't want to pay an arm and a leg, QuickScore Professional could be the ideal way to go. Strictly on the sequencing side, it has some real strengths, including graphic controller editing, but comes up short in a few areas. These are more than offset by








the notation features, which include lyrics, guitar fretboard diagrams, a drum clef, and a generous assortment of markings (fingering numbers, dynamics, accents, fermatas, hairpins, *dal segno* signs, etc.).

playback, the bending instrument was wildly out of tune.

Now about the notation. While nobody is going to confuse QuickScore with a full-featured notation program, it has a surprising amount of power. We've already mentioned the lyrics and the extensive symbol palette. Slurs and hairpins can be positioned by the user, as can fingering numbers, and the printed results are close to WYSI-WYG (What You See Is What You Get). But how much would you

pay if we told you you could select the enharmonic spelling of each note? That's right, *F#* leading tones in the key of *G* minor, plus double-sharps and double-flats on demand. Clefs include treble and bass *ottava* as well as alto and tenor. Tracks can be split up as grand staves, and each track can contain two voices, one stem up and the other stem down. These features are more typical of software that costs three times as much.

Continued

SIDE BY SIDE: WHAT IT WILL & WHAT IT WON'T								
		QUICK- SCORE	POWER CHORDS	MIDI WORKSHOP	POWER TRACKS	CUBASIS	CAKEWALK EXPRESS	ORCHES- TRATOR
PRINT SHEET MUSIC	✓	—	✓	✓	✓	✓	—	✓
PRINT LYRICS	✓	—	—	—	—	✓	—	—
MIDI CLOCK SYNC	✓	SEND	✓	✓	✓	✓	SEND	—
GM FX CONTROL	—	—	✓	✓	✓	✓	✓	✓
CHASE PGM & VOL CHANGES	✓	PGM	—	—	—	✓	✓	✓
SYS-EX RECORD/PLAY	—	—	—	NON-RT	✓	PLAY	—	—
DRAW CONTROLLER CURVES	✓	—	—	—	✓	✓	—	—
CLOCK RESOLUTION (PPQ)	ADJUSTABLE	96	240	48-480	384	120	480	

Several of the programs we looked at this month will print sheet music, with or without lyrics, but check the individual write-ups for more specifics. None allows multiple verses of lyrics to be assigned automatically to the same melody, or respaces the notes of a melody based on the length of the syllables in the lyrics, and some print only one part at a time, not complete scores.

MIDI clock sync is a feature that allows the sequencer to send or receive MIDI clock messages for synchronization. These messages insure that its playback will be "locked" to some other device, such as a second sequencer, digital audio recorder, or drum machine. The sequencers marked "send" will transmit MIDI clocks, but not receive them.

GM (General MIDI) effects control utilities make life easier if you have a GM tone module or GM-compatible soundcard. The effects (FX) control utilities generally appear as sliders or knobs on the screen, which transmit special types of MIDI data that can be understood by a GM synth and used to control, for example, reverb and chorus depth.

The ability to "chase" program and volume changes means that when you start playback in the middle of a song, any data of these types that has been recorded before the playback start point will be transmitted at the instant when playback starts. As a result, all of the musical parts will sound as you intended them to. In the absence of chasing, some tracks may be at the wrong volume or play the wrong sounds except when playback is started from the beginning of the song. We feel strongly that chasing is a vital part of sequencer design. If anything, it's *more* important when the musician is using a smaller MIDI rig, where one synth may be called on to play several patches in the course of a song.

The ability to record, edit, and play back MIDI system-exclusive data is desirable for certain types of automation, such as switching a synth from single patch mode to combi mode in the middle of a song. Bulk dumps of the patches used in a given song can also be stored in a sequencer if it records sys-ex. The "non-RT" in the Power Tracks Pro col-

umn means that it will record and play back sys-ex, but not in real time. Thus it will handle bulk dumps, but not sys-ex automation during a song. The "play" in the Cakewalk Express column means it will play back sys-ex data in existing files (such as commercial GM files) but won't record your own sys-ex.

For adding expression to a musical performance, nothing beats being able to add MIDI controller data (including aftertouch and pitch-bend) to a track. All of the sequencers we looked at will record controllers in real time, but not all of them will display the controller data as graphic curves that you can redraw as needed using the mouse.

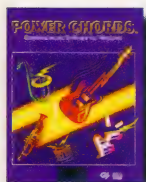
A sequencer's clock resolution, measured in ppq (pulses per quarter-note), is the basic measure of its timing accuracy. The higher the ppq number, the more accurately MIDI performance data can be represented. All other things being equal, the data can then be played back with more expressive subtlety. The resolution of Dr. T's QuickScore is continuously adjustable by the user, to a maximum of 999 ppq. ■

The number of measures per line can be set for each line of the printed score, and first-line indenting is controllable, but you'll hit the ceiling when you try to get your meat hooks into the beam slant and measure spacing. (Nothing in this price range provides user control over these elements.) Time signature can be changed at any bar line, and mixing triplets and duplets in the same staff is possible, but don't try for any quintuplets.

Among the other small peculiarities of QuickScore, we have to mention its non-standard way of handling the mouse cursor when you drag-select a region that extends off the side of the window. Most programs continue to show the mouse cursor outside the window and continue extending the region until you bring the mouse back into the window, but QuickScore redraws the mouse cursor *inside* the window after each extension of the region, forcing you to drag further to the left or right to continue selecting a larger area. Unless you have a mouse pad the size of Idaho and an arm to match, we guarantee you'll be annoyed when you try to drag-select a large region.

Dr. T's will update owners of earlier QuickScore and Copyist software for \$49.95. (They also emphasize that QuickScore Professional for Windows is *not* a port of their QuickScore DOS program, but a completely rewritten application.) They're finalizing a power-user version, QuickScore Elite, which will list somewhere in the \$200 range.

Conclusions. We could quibble with a few of the design details of this program, especially the 16-track limit and the lack of a rewind button — but just as many details are felicitous beyond anything that you'd expect for \$70. As a MIDI sequencer, QuickScore is respectable but not stellar. As an inexpensive notation program, it's a very classy performer indeed.



Howling Dog Systems Power Chords Debut D2.0.06 (\$99.95)

Our first few minutes with Power Chords left us perplexed; it wasn't until the end of an afternoon of Power Chording that we started to appreciate the program's strengths. One thing is for sure: Power Chords does *not* do things the way other sequencers do. Arguably, it shouldn't be called a sequencer at all — but what else would you call it? You can arrange multi-channel MIDI tunes with it, so it must be a sequencer, even though it doesn't have tracks in the ordinary sense. It lacks a library of "styles," so it's not an intelligent auto-accompaniment program, even though you can build up a song from a chord progression.

Notation printouts from four of the sequencers in this month's round-up, as output from a Hewlett-Packard Series II laser printer at 300 dpi. All show the same MIDI file (though not the same lyrics, symbols, or titles).

Jim's Bold New Tune

Brilliantly Conceived and Executed, No Doubt

© 1995 Amazing Snake Productions, Inc.

MIDI Orchestrator Plus handles sustained chords beneath moving notes (2nd staff) better than Cubasis, but the highest notes in the bass part (bar 5, not shown) could only be handled by assigning the entire bass part to a grand staff, and the triplets in bar 3 have been turned into sixteenth-notes. Note that the bar lines don't extend between staves.

Jim's Bold New Tune

Scraggly

Incredible Shrinking Wombat

Power Tracks Pro prints only single parts, not scores, so we printed the first track of our test piece. Note the bar line before bar 1, the too-thin beams, the strictly proportional spacing, and the awkwardly spelled chromatic line in bar 3. The triplet rhythm in bar 3 has been incorrectly interpreted as eighths and sixteenths.

Jim's Bold New Tune

Very Mellifluously

Melody

PianoChds

Bass

Drum Groov

Sing. Bass Player these ly- rics if you would...

Mister

Scrape String

The printout from Dr. T's QuickScore Professional can include many types of symbols, including grace notes (top staff) and fingering numbers (2nd staff). Accidentals sometimes overlap noteheads (2nd system, 3rd staff, 1st bar).

Jim's Bold New Tune

A Viciously Creative Attempt
To Sound Like Myself

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Reserved

Melody

PianoChds

Bass

Drum Groov

Thely- rics look like this if there any lyrics were

would

Cubasis gives the user no control over the number of bars per line, and its output is not WYSIWYG, which can lead to jammed-together lyrics like those below the top staff. Sustained chords below moving voices are handled awkwardly (2nd staff), and no allowance is made for notes that require extra ledger lines (2nd system, 3rd staff, 1st bar).

Admittedly, it suffers from some design peculiarities that would make it a poor choice if you plan to put a lot of demands on your sequencer — like wanting to play 16 tracks of MIDI data, for instance. On the other hand, if you're looking for a musical arrangement tool that charts its own course, and if you have a little extra patience, you might find that working with Power Chords is fun. It's especially recommended for guitarists who know the fretboard and chord names but are shaky on keyboard and music theory fundamentals, which are, after all, biased in favor of keyboardists.

Power Chords builds on a guitar player's way of looking at music. To start recording a song, you enter the chord voicings with the mouse, one at a time, on a vertical fretboard display. The fretboard input mechanism is quite flexible: Each open string can be tuned up or down by half-steps, and can transmit on its own MIDI channel. (In fact, you can design a "guitar" with up to 12 strings, if you dare.) Click on a string, and you'll see a black circle showing where it's fretted by a "finger," and hear the note played by your synth. Of course, you're not limited to hand positions that are actually playable. If you're not sure how to finger an $F\sharp 9\flat 5$, the software will show it to you. It will even show you a number of inversions based on different hand positions.

Once you've got some chords stored in the chord palette, you enter the rhythms with which they will be strummed. This can be done in real time, by clicking on the screen's guitar display with the mouse while the metronome clicks, but you may find that you get more rhythmically precise results by entering note events with the mouse in a rectangular grid called the Rhythm Editor. Each rhythm can be up to 16 bars long, and can contain both duplet and triplet rhythms in very small subdivisions of the beat. You can click anywhere in the grid to add or delete notes, and drag up or down with the mouse to alter the velocity of a note. Power Chords allows notes entered with the mouse to have only eight preset velocity levels, however.

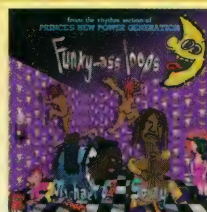
The Rhythm Editor grid is also used for entering melodies, bass lines, and drum patterns. You can draw on the grid with the mouse while listening to looped playback, cut and paste blocks of data, alter the velocities of notes, record a part in real time while listening to a metronome, and so on. Each melody phrase, bass line, and so on is then transferred to its own type of palette. By dragging these elements from the bass, rhythm, melody, and chord palettes into the song window, you create a song. Each measure of the song can be assigned melody, bass, and drum parts, a chord rhythm, and

THE WORLD'S BEST SELECTION SENSATIONAL NEW

FREE CD/CD-ROM



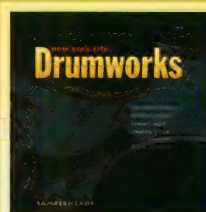
Our BRAND NEW Showcase CD SAMPLEMANIA 3 is FREE with any order. Samplemania 3 is packed with samples and demos from many products. PLUS our CD-ROM 'SHOWCASE' is FREE with any CD-ROM order.



★★★★★
KEYBOARD REVIEW

FUNKY ASS LOOPS

From the rhythm section of Prince's 'New Power Generation' Michael Blend and Sonny Thompson comes a brand new collection of funky loops that blows away the competition. Over an hour of loops and breakdowns from the masters of funk. Put the world's funkier rhythm section into your music - #1 with a bullet!



NEW

NYC DRUMWORKS

•735 loops •517 hits •148 minutes of awesome rhythm played by 8 of New York City's top session drummers on 2-CDs. Funk, Rock, House, Hip-Hop, Latin, Cajun, R&B, Brazilian, Rock-a-Billy, African, Reggae, Swing, Gospel, Country, Thrash beats and lots more! Played at multiple tempos per groove or style!

XTC GOLDMINE 3

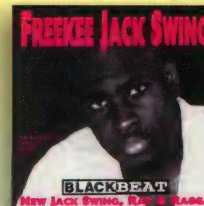
A Journey into the Clubs of the World. House, Tekno, Rave, Garage & Jungle. A raving Generations Dance Bible featuring over 500 Stereo & Mono Loops - Over 1000 samples Cut from Extensive Programming & Vinyl Manipulation - 1500+ Dancefloor Grooves & Samples. Another winner in the X-Static Goldmine series.



NEW

BLACKBEAT

BLACKBEAT features New Jack Swing, Rap & Ragga. If you like Black to Black you'll love this collection. Some of the composite loops are around a minute in length and evolve giving you numerous alternative loops to choose from. If you like the music of Teddy Riley, R. Kelly, Jam & Lewis, Babyface you'll love this. Available NOW!



NEW



NEW

WORLD COLORS

2-CD collection featuring Gipsy musicians from 12 countries: Spain, Italy, Russia, Yugoslavia, Mexico, India, Pakistan, etc. Instruments, vocals, steps, claps, flamenco guitars, grooves, shouts, fiddles, etc...especially recorded single sounds and multisamples. The variety in this collection makes it a killer bargain for only \$99.95



★★★★★
KEYBOARD REVIEW

XTC GOLDMINE 2

X-Static Goldmine 1 was a huge seller, now comes the sequel - HipHop Loops, Ragga Beats, Swingbeat Grooves & ol' Skool Funk Samples - 500+ Phat Grooves & Beats, 1000 Rap/Jazz/Funk samples - Over 1500 Kickin Samples (CD-ROM version has 3000+ MIDI Files + Audio CD in one package)



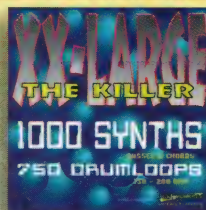
NEW

KARMA CHOPRA

NEW from AMG - Karma Chopra is ethnic orientated, but designed for the dancefloor. It features Fusion Loops (ethnic grooves fused with 'western' drum loops), Ethnic Build-Ups (groups of instruments and breakdowns), Tabla Grooves, Ethnic Grooves, Licks and Hits and a selection of Rolls, Wierd Ambient Samples and more!

XXL-THE KILLER

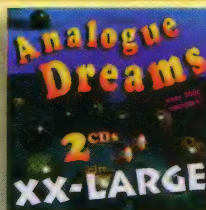
100 MINUTES!!! mostly stereo sounds + different monosamples on the left and right side - •750 Synths (chords, organs, voices, pads) •250 Bases •750 Drumloops (exactly tuned and sorted out in BPM-groups of 130 to 200 (Vol. 1 covers the slower beats) PLUS! 100's of classic analog drum machine sounds.



★★★★★
KEYBOARD REVIEW

ANALOG DREAMS

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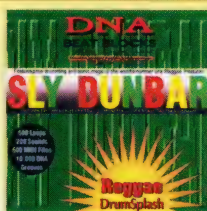


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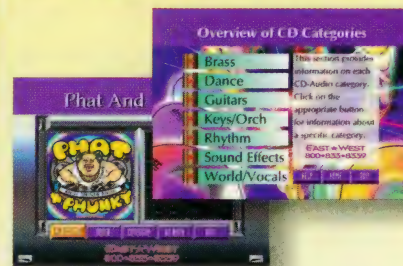


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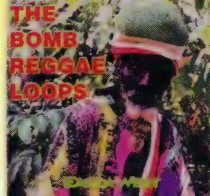
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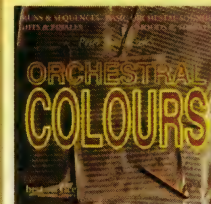
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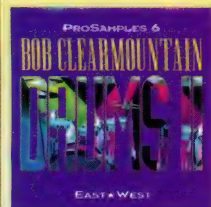
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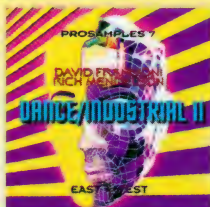


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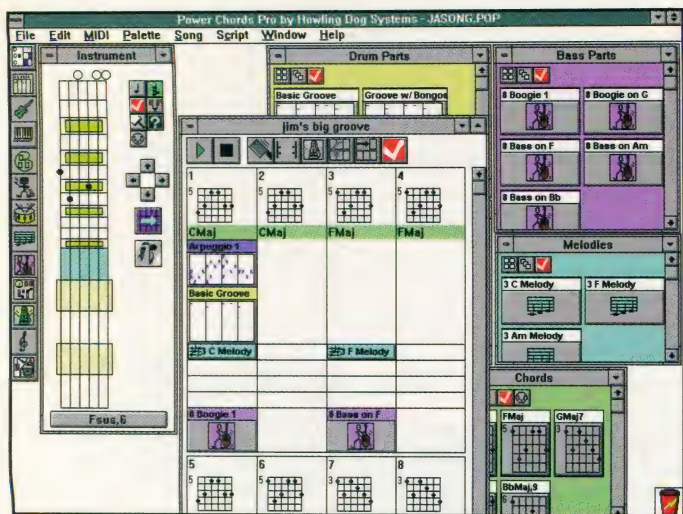


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Power Chords Debut is organized around a set of palette windows, each containing a different type of part. To assemble a song, you drag parts from the palettes into the arrangement window (center). The fretboard at left is used for entering chord voicings.

a chord. You can also chop a single measure apart and put a separate chord on each beat, if needed.

Even in the 2.0 version of Power Chords Pro, which we used for this review because Power Chords Debut was not yet available, build-

ing a song requires that you think in a fairly structured manner. Different "tracks" behave in different ways, for example, depending on the normal musical application. A chord strum will keep jammin' until you enter a change; there is no way to mute a chord part during one section of the song, other than by creating a "mute" pattern that has no notes in it, and inserting it where needed. Another important point: Unlike "intelligent" arranging programs, Power Chords won't transpose your bass parts to match the chord changes. You must manually create a bass line for each root.

Power Chords transmits program changes in annoying profusion, making it tricky to use with non-General MIDI gear. A program change of 0 is transmitted, for example, each time you stop playback in the drum part editor, even though this is certainly not required by the General MIDI spec. The program provides no control over MIDI volume at all, and tempo changes can be entered in a song only at bar lines.

While you won't find conventional tools such as a graphic controller editor or an event editor, Power Chords does have a couple of spiffy utilities. For instance, you can drag a chord onto a staff window and see it notated on a treble-and-bass grand staff. The program will export Standard MIDI Files, which means that you could rough out an arrangement quickly in Power Chords and then import it into a normal sequencer to add solo lines or finishing touches. The Debut version won't import Standard MIDI Files, however. (FYI, the ability of the Pro version to import MIDI Files is limited: After importing such a

ON-LINE HELP

logical filter: Though each manufacturer has its own name for this feature, the concept has become widespread on high-end sequencers. After selecting a group of MIDI events (such as an entire track or a region within a track), you apply one or more logical tests to the events. Those that pass the logical test remain selected, while those that fail are deselected. Your chosen edit operation is then applied *only* to those events that passed the test. For example, a simple logical filter might select notes with a velocity greater than 112. The edit operation might then reduce note velocities by 15. In this situation, a note recorded with a velocity of 110 would be unaffected, but a note with a velocity of 120 before the edit would have a velocity of 105 afterward.

MCI command: Microsoft Windows provides a utility called the Media Control Interface (MCI), which is used for things like triggering audio file or even video clip playback on a Windows computer. A sequencer that can transmit MCI commands during playback can take advantage of this Windows capability.

piano-roll editor: Since standard music notation doesn't represent some aspects of music performance (notably the precise lengths and rhythms of notes) very well, sequencer designers have adopted an editing environment generally known as a piano-roll editor. Unlike the paper roll on an old-fashioned player piano, which spooled vertically, a piano-roll editor displays music with the time axis running from left to right.

Like a real piano roll, however, it displays notes as simple bars or black rectangles. Generally the five-line staff is eliminated as well. The pitch of notes is displayed vertically, with low notes at the bottom of the window and high notes at the top. A miniature keyboard is usually displayed along the left edge of the window to provide a pitch reference.

quantization: This universal function of sequencers aligns a loosely played MIDI performance to a standard rhythmic grid—for example, by moving each note forward or backward so that it lines up in time with the nearest ideal (that is, perfectly played) sixteenth-note. After quantization, a track will sound metronomically precise. Various schemes are used to make a quantized track sound less robotic and more pleasing. Two of the more common are *swing* and *percentage* quantization. When swing is applied, notes that fall in the second half of each beat are delayed by the swing amount, producing the dotted or triplet rhythm characteristic of jazz. In percentage quantization, notes are moved only part way to the chosen rhythmic grid: How far they are moved is determined by the quantization percentage or *strength* setting. For example, if a note is originally recorded 10 clock ticks before the beat, and the quantization strength is 50%, after quantization it will play back 5 ticks before the beat.

SMPT/MTC: The Society of Motion Picture and Television Engineers (SMPT) established a type of *time code*, a signal that

can be recorded on audio tape. With this signal, various devices such as video decks and multitrack tape decks can be synchronized during playback. SMPT time code, often referred to simply as "SMPT," can't be transmitted over a MIDI cable in its original form, but a type of MIDI signal called MIDI Time Code (MTC) provides a direct translation of SMPT time to any device such as a sequencer that is capable of MTC sync.

sys-ex: MIDI defines a type of data called *system-exclusive* or *sys-ex*. This data is left open for each manufacturer to define for their own instrument(s), and is typically used for two purposes: editing individual parameters on a synthesizer under remote control, and transmitting an entire bank of programs to or from a synthesizer (a *bulk dump* or *patch dump*).

WYSIWYG: This acronym (pronounced "wizzy-wig") stands for "What You See Is What You Get." Computer graphics programs, including notation programs and word processors, are often WYSIWYG, which means that a document displayed on the computer screen will look very similar to how it will look when output from a printer. Non-WYSIWYG notation programs generally change the spacing of notes and lyrics prior to printing. The user may be provided some dimensions of control (such as being able to specify the number of measures to be printed per line), but precise positioning of individual symbols is usually possible only on a WYSIWYG program. ■

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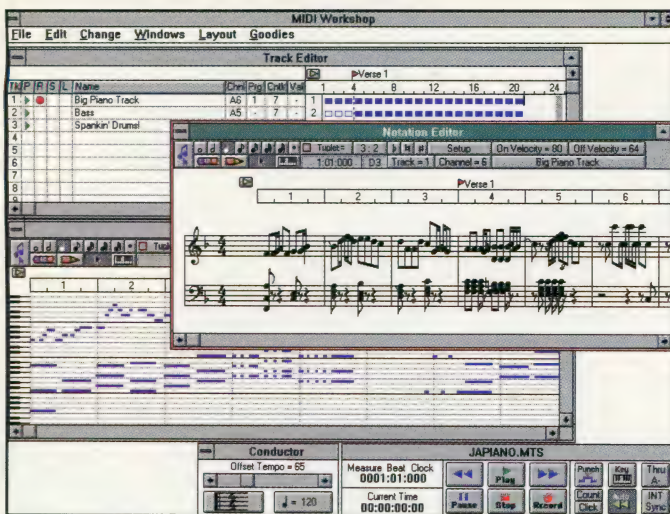
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MIDI Workshop features a track sheet (top) and notation and piano-roll editors.

file, you have to cut and paste blocks from its tracks into Power Chords' Rhythm Editor, which will turn the blocks into parts that Power Chords can play back.)

Debut owners can upgrade to Pro for \$59, and Power Chords

1.1 owners can upgrade to Debut for \$19. A free demo disk is available from the manufacturer. According to Howling Dog, the release version of Power Chords Debut will include Yamaha XG support, naming of non-GM synth patches, and AWE-32 SoundFont support.

Conclusions. Not the sequencer for everybody — but we're always happy to cut a little extra slack for programs that take a fresh look at tired old paradigms. We found Power Chords fairly cumbersome for standard MIDI recording jobs, but if you like fretboard-style input and being able to build a song from a chord chart and rhythm strum patterns, you might be very happy with it.



Passport Designs MIDI Workshop 1.0 (\$69.95)

Passport's MIDI Workshop is an adequate sequencer, but it doesn't have a lot to offer, unless you count the fact that it's simple enough not to confuse the novice. It does have a couple of advanced features: First, it can send Windows MCI commands to trigger the playback of audio .WAV files. But Cakewalk Express will do that, and a whole lot more besides. Workshop is bundled with a Sound Blaster MIDI adapter cable, which some buyers are bound to appreciate. For the more experienced sequencer user, it stands out at this price point in one respect: It has excellent quantization controls, complete with

GUITAR SEQUENCING NIGHTMARE: WHEN IS LEGATO NON-LEGATO?

One of our more industrious readers, Ed Clay of Somerdale, New Jersey, contacted us not long ago to voice a surprising complaint: Many of the most popular sequencers just plain don't work right when it comes to recording and playing back MIDI guitar parts in legato mode. He sent us a test MIDI File and a list of the PC sequencers (both Windows and DOS) that pass — or don't pass — his legato mode test. As it happens, none of the sequencers in this month's round-up were among the 22 that he tested, but we thought readers would like to know more about the problem, and possible fixes.

If you're a MIDI guitarist and are shopping for a sequencer, here's the short list: Ed recommends Big Noise Cadenza (version 2.1D for DOS, version 2.04 for Windows) and Big Noise SeqMax for Windows (either version 3.2 in the MIDI MaxPac or version 1.51b of SeqMax Presto). In the DOS world, he got good results with Forte II (version 2.3 for DOS) by David Hicks, and also a couple of more obscure programs: 64 Track PC (version 2.0 for DOS) by Keller Designs, and Spirit by Mellotron Digital. (Mellotron Digital is no longer in business, and we have no current information on the whereabouts of Keller Designs.) Ed has tested most of the big-name sequencers for the PC, including Cakewalk, Vision, Cubase, and Micrologic, and none of them could pass the guitar legato test. But there may be simple workarounds, as we'll explain below.

Here's the technical scoop, as best we can determine without testing all of the se-

quencers ourselves: When a MIDI guitar controller is transmitting in legato mode and you do a hammer-on, the controller sends the note-on message for the hammer-on note *first*, and then immediately sends the note-off message for the previous note. This insures that the receiving tone module (which must also be set to legato mode) sees that the two notes overlap. Even a tiny overlap is sufficient for the module to understand that the two notes are to be sounded in a legato fashion. (Remember, MIDI is a *serial* protocol, which means that two events can never happen at exactly the same time. One must always come before or after another.)

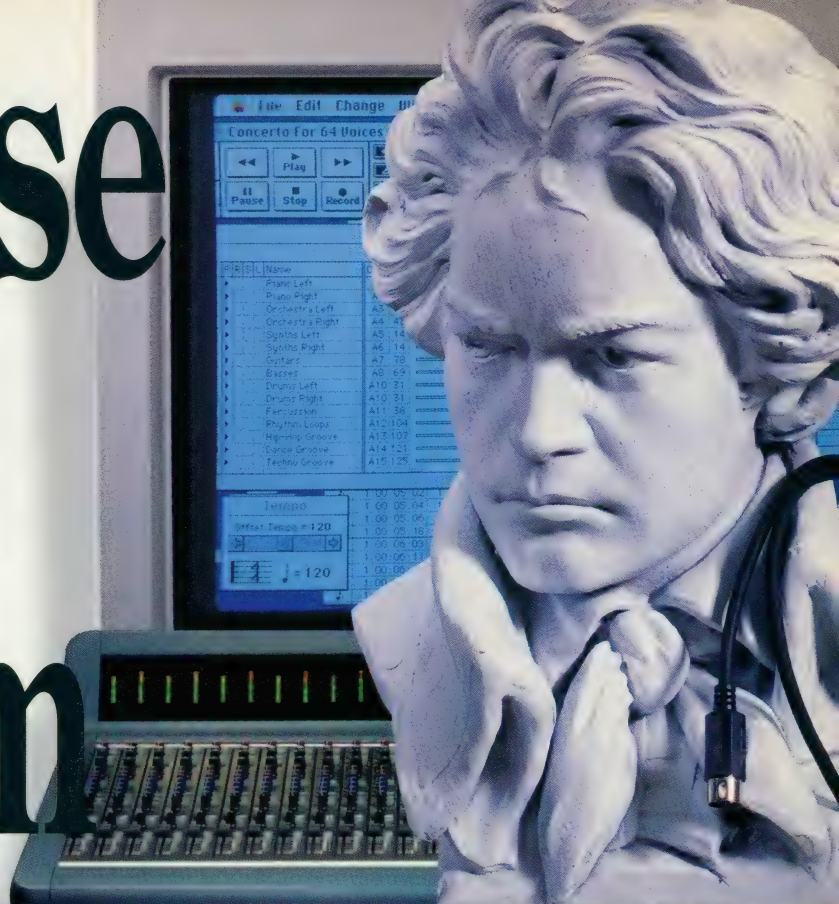
When these same two notes are recorded into a sequencer, however, the sequencer may try to be "intelligent" and "help" the musician. When a note-off and a note-on (on the same track and MIDI channel) are to be played back close together, Ed discovered that the sequencer is quite likely to invert their order, transmitting the note-off first, followed by the note-on.

Why would it do this? Programmer Chris Phillips of Twelve Tone Systems reminds us that when sequencers were being programmed in the early days of MIDI, some synthesizers didn't understand how to play overlapping notes of the same pitch. When a note-off of a given pitch was received, the synth would switch off *all* sounding notes of that pitch. Thus it was important for the sequencer to shut off the first instance of a note at a given pitch before starting the second instance. Putting note-offs before note-ons was a quick way

to insure this. These days, a more likely explanation is because some tone modules refuse to play a new note unless they have a free voice. A sequencer programmer might reason that if you're trying to play an active MIDI arrangement with a tone module that is about to run out of voices, you probably would rather hear as many notes as possible, even if a few of them are cut off just slightly early. Accordingly, the programmer might "optimize" the playback code to free up voices on the module when it seems that the note-off and note-on are so close together that it shouldn't make any perceptible musical difference which message is transmitted first. The trouble is, when it comes to legato mode, the order of the messages makes a huge difference.

If you should find that your sequencer loses the legato in a MIDI guitar track, what you need to do is lengthen the legato notes just slightly, so that the sequencer no longer sees the note-off and note-on as being, for practical purposes, simultaneous. In our experiments, lengthening the notes in a track by as little as two clock ticks solved the problem. It's not likely that two ticks will be enough to turn notes into legato that you intended to be separate. All you need is a sequencer that gives you control over the durations of blocks of notes. In this month's round-up, MIDI Workshop, Power Tracks Pro, and Cakewalk Express (which allow you to change the durations of a selected group of notes to 101% of their current value, though not to add single ticks to the durations of grouped notes) offer a partial solution to the legato problem. ■

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programmable swing, tuplets, percentage quantization, and the ability to slide notes forward or backward relative to the beat. Other than that, its notation and editing features are simply less powerful than those in the other programs.

While it will do the job perfectly well when it comes to basic chores such as punch-in recording and real-time recording of controller moves from an on-screen slider, it lacks both event-list editing and graphic controller editing, which leaves you no easy way to do things like change the contour of a messy pitch-bend. Also, it's designed in such a way as to require extra mouse clicks for some operations.

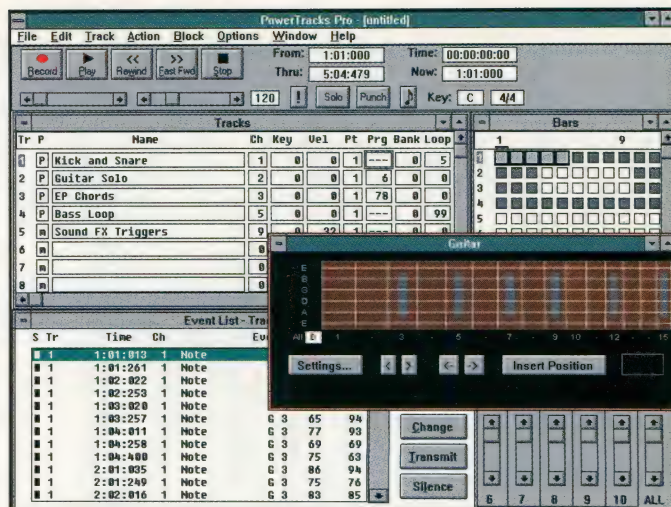
MIDI Workshop's track sheet is fairly standard — track names, mute and solo buttons, a column for program changes, and so on. You can insert named markers at any point, and locate to the markers with the TAB and SHIFT-TAB keys, an excellent amenity not found on any other sequencer in the round-up. Each track is equipped with a horizontal slider, which can be used for overdubbing controller data such as volume fade-ins and fade-outs. As in Cakewalk and Power Tracks, measures in which music has been recorded appear as dark rectangles, and these can be cut and pasted on this screen. You can cut and paste controller data independent of notes, and scale note velocities up and down, but that's about it for editing of the expressive aspects of a performance.

If you need more precise editing than cut-and-paste, you'll naturally turn to the piano-roll and notation editing screens. Rectangular regions can be selected for cutting and copying in the piano-roll view — a helpful feature for two-handed players who want to replay a melody without erasing the bass line, for instance. The noteheads and stems in the notation view are dumped on top of one another in a godawful mess that makes it very difficult to single out a given note to be erased or transposed.

We spotted several other areas that could use improvement. MIDI thru, as on many sequencers, is on the same channel as the track currently selected for recording. However, Workshop lets you select a different record track while holding notes on the keyboard, which will produce stuck notes. (Cakewalk Express has the same problem.) Many sequencers implement the transport controls as "floating" windows, which means they will always be visible, no matter what other window is "fronted." Not Workshop. If you should use the standard Windows button to maximize any other window, it will cover up the transport controls. You can get them back by using a command in a pull-down menu — but the very next time you click on the maximized window (like, to do anything other than start or stop playback), the transport will disappear again. When you stop playback, a pitch-bend will be re-centered, but mod wheel data won't be zeroed out, so you may encounter wacky vibrato the next time you start playback. Any of these by itself is a minor complaint, to be sure, but there are too many such issues for us to feel comfortable recommending this software.

Workshop's notation can be printed out — in theory, at least. On our HP LaserJet Series II, it produced nothing but blank pages. Passport confirmed that this behavior was due to a bug. Not much loss, as Workshop offers almost no amenities for producing good-looking sheet music. Heck, it won't even turn multitrack arrangements into scores; it *only* prints one track at a time, and this always appears on a grand staff, even when one of the two staves contains nothing but rests.

Conclusions. As much as we'd like to give every entrant a gold medal and a blue ribbon, or at least a kiss on the cheek, MIDI Workshop limped around the clubhouse curve in last place. Solid quantization commands and a bundled soundcard MIDI adapter aren't enough to make up for lame printing, too many mouse-clicks, and not enough editing muscle.



In Power Tracks Pro, the track sheet (upper left) is in a separate window from the display showing which measures have data recorded in them (upper right). Event list editing (lower left) and a fretboard display are also featured, as is an on-screen mixer (lower right, mostly covered up by other windows).



PG Music Power Tracks Pro 2.2 (\$29)

Power Tracks Pro has the distinction of being the cheapest Windows sequencer you can buy. Not counting shareware, of course. And even mentioning shareware in the same breath is rather an insult, because Power Tracks is a surprisingly powerful piece of software. It's the *only* sequencer in this month's round-up, for instance, that boasts MTC (MIDI Time Code) synchronization. The logical filter for event editing is second only to the filter in Cakewalk Express in terms of sophistication. Also, Power Tracks has a jukebox feature for loading and playing a whole set of songs from disk, one after another. (For little surprises, you can enter wild cards into your set list.)

In other respects . . . well, you get what you pay for. Power Tracks' user interface looks less Windows-native than that of any other sequencer profiled this month. Many (most, in fact) data values must be edited by double-clicking on the value to open up a little dialog box, in which you type the new value and hit return. There's no chasing of program change and controller data. Actual mouse-based editing is limited to selecting regions of bars in the bars window, dragging notes in the notation window, and clicking on various check-boxes. But if you can live with the awkwardness of typing numbers constantly, you'll find that this sequencer's Bang For The Buck quotient is way up there.

Power Tracks provides rudimentary notation editing and printing. You can display the contents of one track at a time in notated form, and this can be printed out (in treble clef, bass clef, or grand staff) complete with guitar chord symbols. But the program won't print lyrics or complete scores, and its printed output (see page 30) leaves a bit to be desired even in the way of standard appearance: There is a bar line before the beginning of bar 1, and slanted beams are not supported. In fact, bars in time signatures other than 1/4, 2/4, 3/4, and 4/4 are drawn (to both screen and printer) as blank.

The notation window doubles as a crude piano-roll display: Stemless noteheads are shown on the staff, with horizontal bars to indicate duration and optional vertical bars to indicate velocity. The only way to edit the latter parameters is to double-right-click, which (naturally) opens a dialog box in which you can enter new numerical values.

The on-screen mixer in Power Tracks may look a little funky at first glance, because the volume sliders are standard scroll bars. But we wish some of the other mixers in this round-up worked as well. You can overdub volume, pan, and other controllers from this window

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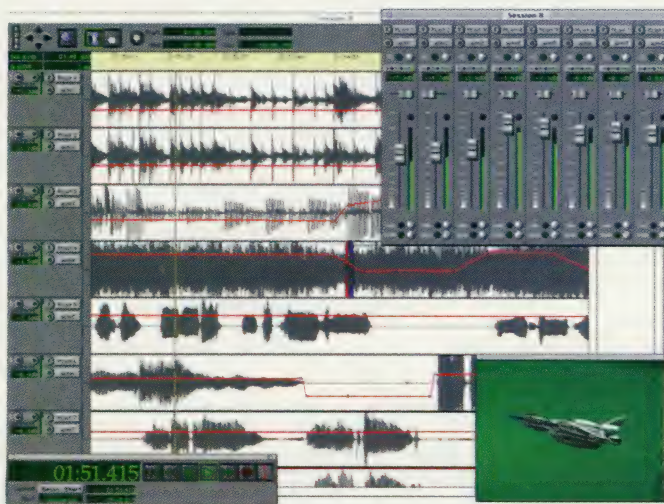
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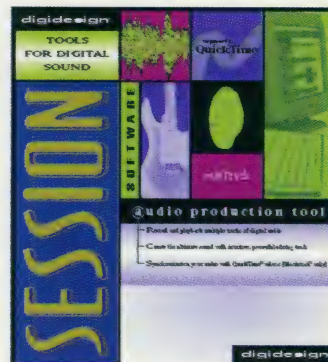
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while the music plays, and on playback you'll observe the knobs and sliders scoot up and down in time with the music. There are master controls for all of the mixer controls of a given type, but no snapshots or grouping of sliders.

While Power Tracks has no graphic controller window, it does have a couple of nice extras in the editing department. First, you can have several event lists open at once, so as to compare the data. Alternatively, you can show the data for several tracks at once in a single list. If you've recorded a multi-channel performance to a single track (which you might do when dumping from another sequencer, for example, or when playing a MIDI guitar controller), Power Tracks will separate each channel of data onto its own track with a quick utility command. Tracks (or smaller regions) can be time-stretched, which is good for ritards or for introducing weird syncopations. You can even replace instances of one event, such as notes, with a different type of event, such as controllers.

If you're not handy at programming drum grooves, you'll appreciate the fact that Power Tracks ships with upwards of a hundred drum patterns in a variety of styles, ranging from dance to tango. A special "fill" command lets you paste multiple copies of a pattern into a track for instant drum backup.

Now about sys-ex: There are two main reasons for recording MIDI system-exclusive data into a sequencer: patch storage, and real-time automation of synth parameters. Power Tracks supports the former via a special sys-ex dump utility, but not the latter, as there is no way to insert sys-ex packets into tracks for playback. You can edit the sys-ex dumps in hexadecimal, if you dare.

Clock resolution can be set to any of 11 different values between 48 ppq and 480 ppq. This is a set-it-and-forget-it parameter, but it's nice to see Power Tracks supporting hi-res recording. A small but

appreciated plus: Your MIDI metronome setting (note, channel, velocity) is stored with each song. In the SMPTE/MTC domain, the program supports the four most common frame rates, and can be given an offset start time.

Oh, and did we mention the fretboard display? By routing a track to this or simply playing your MIDI keyboard, you can see the notes pop up in real time as green rectangles on the appropriate string and fret — possibly useful for students. Chords are not voiced appropriately across the neck, however, which limits the window's usefulness.


According to PG Music, Power Tracks is scheduled for "a major upgrade" by the time you read this; current owners will be able to acquire it for "about \$10." Planned improvements include lyrics, triggering of .WAV files, sys-ex data incorporated in Standard MIDI Files, programmable ritards and accelerandi, a record (input) filter, and a stunning 3D makeover for all those dialog boxes.

Conclusions. Power Tracks Pro is a weird mix: In spite of being the least expensive sequencer in the known universe, it has some features that outstrip software that costs three times as much. At the same time, it's not exactly graceful to use, and it lacks important amenities. If you're the kind of person who likes finding unexpected power in out-of-the-way places — like, if you prowl the flea markets for unbelievable bargains in pre-owned microscopes and table saws — this is definitely the sequencer for you.




Steinberg Cubasis 1.11 (\$99)

As the entry-level version of Steinberg's pro-oriented Cubase sequencer, Cubasis has a lot to offer, including a slick professional look and an upgrade path. It isn't the best notation program in our roundup, but even considering one or two nagging prob-



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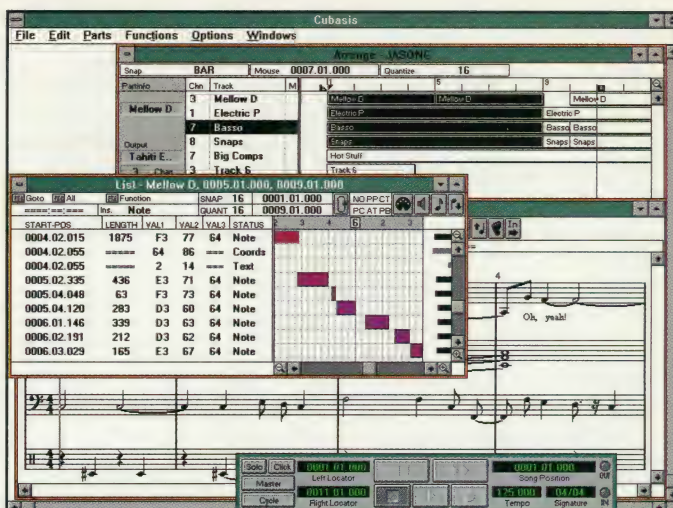
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lems, it goes toe to toe with Cakewalk Express in the finals for Most Powerful Sequencer.

The track window shows your music data as blocks called "parts" rather than as one-bar filled-in rectangles, an approach that makes building an arrangement by cutting and pasting quite a bit easier. With a "scrub tool," you can audition the notes in a single part by scrubbing the mouse back and forth. Parts can be split apart with a scissors tool, or combined with a tool that looks like a little tube of glue. Tools are accessed via the right mouse button, which is a fast, efficient way of working.

Each part can be given its own program change, MIDI volume level, transposition, and velocity offset. This is especially convenient when you want to create, for instance, an arrangement where the strings are on channel 1 in each verse and the trumpet is also on channel 1 in each chorus. In the version we were sent for review, Cubasis didn't correctly chase program and volume changes. When we alerted Steinberg, they told us that this was simply a bug. Chasing is implemented on higher-end versions of Cubase, and was inadvertently "locked out" of the entry-level version. If the copy of Cubasis that you purchase doesn't chase correctly, contact Steinberg for a free update.

Cubasis has a piano-roll editor with comprehensive graphic editing of controller data. This screen can be zoomed both vertically and horizontally, which gives you terrific control over small edits. Using a caliper tool, you can create smooth controller and velocity contours. Constrained dragging of groups of notes (changing the pitch without changing the start time or vice-versa) is supported. Step recording is provided in this window — and when you close any edit window, you have the option to keep or cancel your edits, an extra level of "undo" that can be a lifesaver. Not only is controller data displayed



The event list editor in Cubasis (center left) includes graphic editing tools. The track window (upper right) displays the MIDI data as parts that can be scissored apart and freely moved around. Lyrics can be added in the notation editor window.

in color, there's even a menu item that lets you program your own bilious shades of pea-soup green if you don't like the defaults.

In the notation department, Cubasis falls somewhere in the middle of the pack. It lacks the extended symbol palette of QuickScore, but it does allow you to add lyrics below the melody, and position each syllable. Because the output is not WYSIWYG, positioning lyrics is likely to be an exercise in patience and wasted paper. Multi-staff scores can be created, and a title can be centered above the first line, but Cubasis will make its own decisions about

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things like the spacing between staves and the number of measures to print per line.

In the event list, all values can be incremented by clicking and holding the right mouse button, or decremented with the left button. This makes editing much, much faster than on programs that use a dialog box. Not only can you edit sys-ex data one byte at a time, you can tuck short text comments into the event list, or even program a "mute track" command that will mute and unmute other tracks at specific points during playback.

The quantization commands in Cubasis fall short of those in several other programs in the same price range. You get to quantize to the standard rhythm value of your choice, and that's it: no swing and no strength percentage. The good news: Quantization is always undoable for individual parts, so you never have to lose the live feel of your original recording.

General MIDI program names are supported only in the 16-channel GM/GS/XG editor, a mixer window with volume and pan controls and reverb and chorus depth settings. Selecting the Roland GS or Yamaha XG "standard" will add some new controls to the window — a very thoughtful touch. Sadly, the only way to record the data from this window into a sequence is to patch a MIDI cable from the PC's out back to its in. Cubasis won't record GM/GS/XG controller data into its own tracks; it only transmits it to the output in real time. (Be sure to switch off Cubasis's own MIDI thru when you do this; otherwise, you could lock up your computer.)

Conclusions. Cubasis is a very user-friendly sequencer, because of the part-based design of the track window and the ease with which you can undo edits. Its lack of WYSIWYG output leaves it behind QuickScore in the score printing department, but at least it will print lyrics. When we learned that a bug-fix is available that allows Cubasis

to chase program and volume changes, we boosted it into a tie with Cakewalk Express for the top rating in our round-up.



Twelve Tone Systems Cakewalk Express 3.01 (\$89)

As one of the original MIDI developers for the PC, Twelve Tone have had plenty of time to refine their concepts in sequencing. So it's not surprising that their entry-level program, Cakewalk Express, provides many of the high-level functions that you'd expect to find in a more expensive program, from looping tracks to edit windows that will zoom in and out. Also, Express ships with a free soundcard MIDI adapter, which is handy since most soundcards don't ship with one. The one big omission: You can edit your music in a notation window, but you can't print it out.

Express provides all of the usual record/edit windows, including piano roll, graphic controller, mixer, and event list. It also has a very flexible track-looping feature, which lets you set up a musical pattern and play it however many times you'd like starting at any point in the song. With 256 tracks to work with, you could build up whole arrangements made of loops, if that's how you prefer to work.

The track sheet contains more than the average set of playback parameters, including time and velocity shift as well as channel, patch name/number, volume, and pan. Huge, informative track names can be entered, and will be displayed properly, with no cutting off of the last part of the name. General MIDI patch names are supported — but if you have a non-GM synth (or a rack of them), all it takes is a bit of patience to type in the names of all of your patches. Thereafter, you can select any sound in your rig by patch name.

The columns in the track window that contain the patch names

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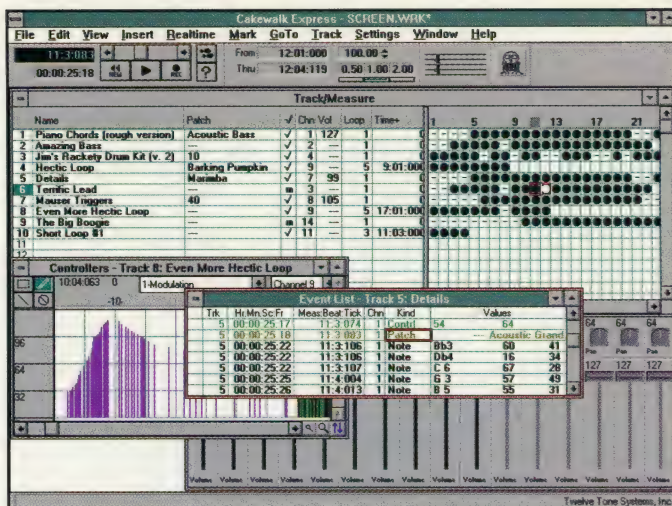
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and other settings can be reconfigured to suit your preference by dragging columns left or right. This preference is not saved with each file, but you'll probably want to stick with one preferred layout in any case. After dragging the track columns into position, you can hide the ones you don't want to see, which opens up more room for the rather primitive measure display. This shows measures as little squares, like the squares on graph paper. Those that have data recorded in them have big black dots in the squares, which is visually clear but not exactly luxurious.

At least, you won't think it's luxurious until you go to do a little cutting and pasting. Select a block of measures by dragging across them with the mouse, select COPY from the pull-down menu, and then click the innocuous-looking "use event filter" option in the dialog box. Zow! A dialog box opens up that fills the whole screen with *detailed* check boxes and numerical parameters. You can make a copy of the data that includes (or excludes) particular note and velocity ranges, particular controllers within particular value ranges, polyphonic aftertouch for particular keys, and "special" events like lyrics, MCI and .WAV commands, and sys-ex data. Since you can copy a selected range onto itself in replace-data mode, the copy utility functions as a very flexible data filter for getting rid of unwanted stuff. This utility even has a beat filter, with which you can strip out notes or other data that falls within a particular beat in any of a series of bars.

This same dialog box can be used in conjunction with a GoTo command, for event search-and-locate. Not sure which bar in your 500-bar tune has that pesky program change in it, or a sustain pedal event that's causing trouble? Cakewalk Express will find it for you in nothing flat.

The piano-roll edit window is fairly standard: It allows you to drag notes around, lengthen or shorten them, and insert new ones



Cakewalk Express has most of the screen amenities of Cakewalk Professional, including track parameters with GM program names (top), an event edit list with color-coded event types (center) and a mixer window (lower right).

with a pencil tool. A couple of nice extras are provided, though. You can select all notes of a given pitch and drag them up or down together, which is a terrific shortcut for editing drum tracks. With the scrub tool, you can play the music (forward or backward) with the mouse. Drawing of note velocity contours is also supported.

The graphic controller window is used for drawing other types of data. It has a pencil tool for drawing data, an eraser tool, and a straight line tool for edits — the basics, no frills. On the plus side, you can have several controller windows open for the same track

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at the same time, each showing a different type of data. Tempo changes can be drawn with the pencil tool as well, and it can be used for step-entering notes in the notation window.

Express's mixer window has volume, pan, and reverb and chorus depth controls for each of the first 16 tracks (no matter what MIDI channel they happen to be assigned to). With the snapshot button, you can store the current settings of these controls at any point in the tracks. This is the only form of mixer data recording, however. The manual states that you can record real-time fader moves, but apparently this is one of the features that was "locked out" of the Express version of the program.

Even though the program isn't equipped with SMPTE synchronization (you'll have to upgrade to Cakewalk Professional for that), events in the event list are displayed with hour/minute/second/frame data right next to the measure/beat/tick data. Just for fun, we entered a value of four hours and some odd minutes for one of our notes, and Express obligingly relocated it to measure 5,961. Now if only there were a command for hiding the SMPTE times if you don't care about them. . . . You can create markers with names at any point in the music, and lock a marker to a fixed clock time so that it won't move if you change the tempo — not much use in the absence of SMPTE, but the feature is there if you need it. By clicking on the name of a marker in the Markers list, you can locate instantly to any point in the song.

We have a few quibbles about the design of Cakewalk Express. First, quantization is primitive: no swing or percentage settings. The clock resolution is a minimal 120 ppq. Sys-ex data in existing files will be played back, but the program won't let you record your own. And the soundcard adapter's 6' cables, like those that Passport provides with MIDI Workshop, end in MIDI plugs, not jacks, which is nice

if you don't own any MIDI cables but is a major pain if your keyboard isn't set up within six feet of the computer's rear panel.

Conclusions. All things considered, Cakewalk Express ties with Cubasis as our choice for Best Buy in this price range. True, it won't print scores, and its clock resolution is minimal, which may reduce the rhythmic precision of your recordings. But it more than makes up for these shortcomings with its track looping, event searching, the ability to trigger .WAV files, and other hot stuff. If you find that you need score printing, you can upgrade to Cakewalk Home Studio for \$49, or to Cakewalk Professional 3.0 for \$149.



Voyetra MIDI Orchestrator Plus 1.44 (\$79.95)

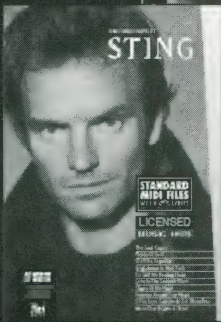
MIDI Orchestrator Plus was the first sequencer we installed this month, and for the most part it was a pleasure to work with. It has a clean professional look and a few surprising amenities, and we barely had to crack the manual to record our first tune.

The program has an excellent piano-roll editing window, and the track window can be configured to your taste, with the mute, channel, volume, and transpose columns (among other items) in any order you prefer. Rearranging a song is a snap, thanks to the click-and-drag editing in the track window, where each bar that has music in it is displayed as a little black box. You can send real-time volume, pan, reverb and chorus depth control data, and program changes on all 16 MIDI channels from the mixer window. When you move the mouse over a control, a single line of type will appear at the top of the screen telling you something useful (such as what a right-mouse-click will do). The notation printing utility is extremely primitive, but could be adequate for rehearsal parts.

Most operations work the way experienced computer users would

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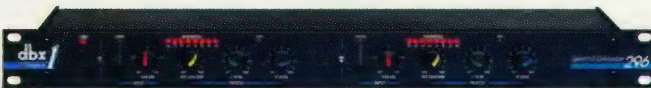
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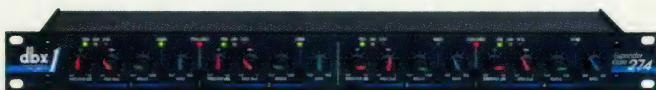
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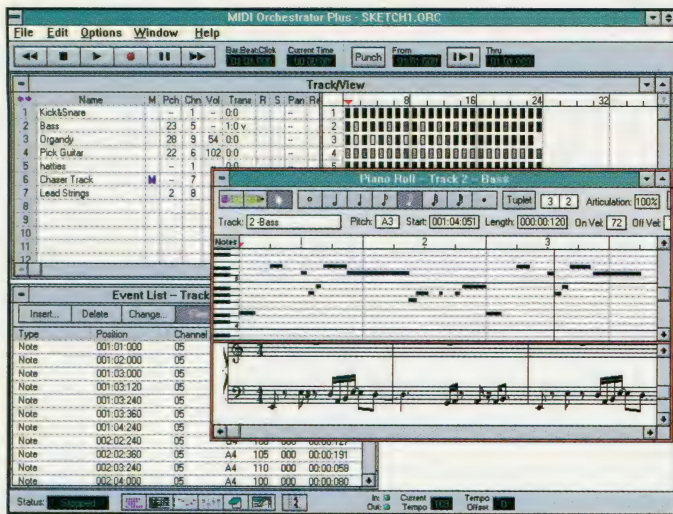
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MIDI Orchestrator Plus has a track sheet (top), piano-roll and notation editors (center right), and an event editor (lower left).

expect, although there are places — such as when you click on the start time to change it — where you can't edit the screen display directly. Instead, a dialog box pops up, and you edit the values in it. Likewise, in the event-list screen, you can't edit an event simply by clicking on one of the data values. Instead, you double-click on the event, and a dialog box opens up in which you can fiddle with the various values of the event (such as note duration and velocity). Data entry, in other words, is a little slower than we'd prefer.

Among the cool features: In the piano-roll window, you can "scrub" back and forth with the right mouse button and hear the music play

— backward or forward — as the time cursor scoots across the screen. When you drag notes around in this screen, the dragging is constrained to vertical (pitch) or horizontal (time), so you don't need to worry about affecting the rhythm if you want to transpose a note or phrase up or down. Selected types of events (such as pitch-bends or aftertouch) can be hidden in the event list, so you can conveniently examine the notes by themselves. As with most sequencers these days, you'll see a time cursor moving in each window during playback. Even when multiple windows are open, all of them are updated in real time, which makes it very easy to spot a place that you want to edit. If you've programmed some tempo changes for a grand ritard, you may be very grateful for Orchestrator's tempo offset control, which lets you adjust the overall tempo up or down without having to edit the tempo changes singly.

Orchestrator will do punch-in/out recording, but not overdub recording onto a single track. Any time you go into record, it erases whatever is currently on the track from where you start to where you stop. Not to worry, though: There's an undo buffer. In fact, you can undo and redo multiple edits, thanks to the multi-step undo/redo buffer.

Orchestrator is missing some of the features that power users demand. There's no graphic editing of controller data, for starters, and the mixer window sliders are strictly for convenience; you can't record a fade-in or fade-out using them. Heck, you can't even filter incoming aftertouch data to prevent it from clogging up memory. Nor can Orchestrator record sys-ex data, so there are certain MIDI remote control operations that it won't perform. Quantization includes a percentage (strength) setting and the ability to handle triplets, making Orchestrator the second-best program in the round-up in this area. Only MIDI Workshop has better quantization.

Orchestrator is General-MIDI friendly: Right-click on the patch

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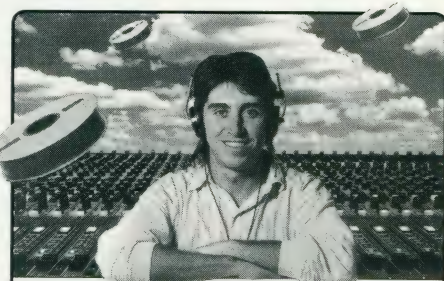
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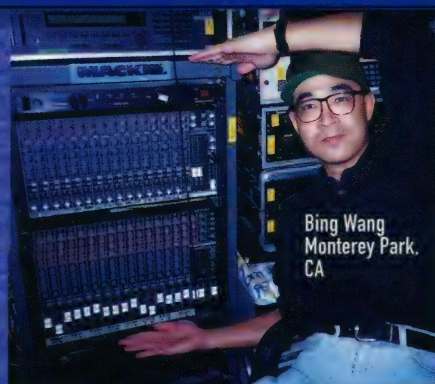
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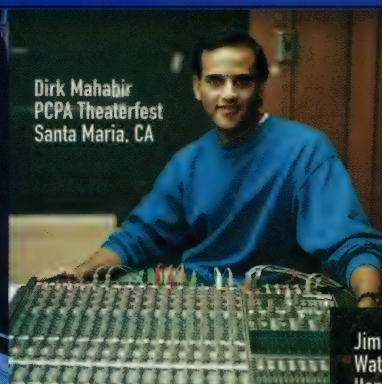
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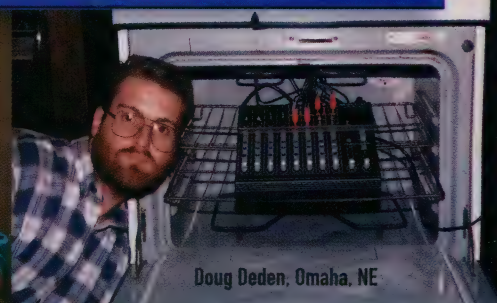
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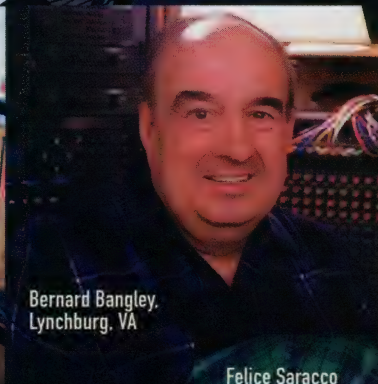
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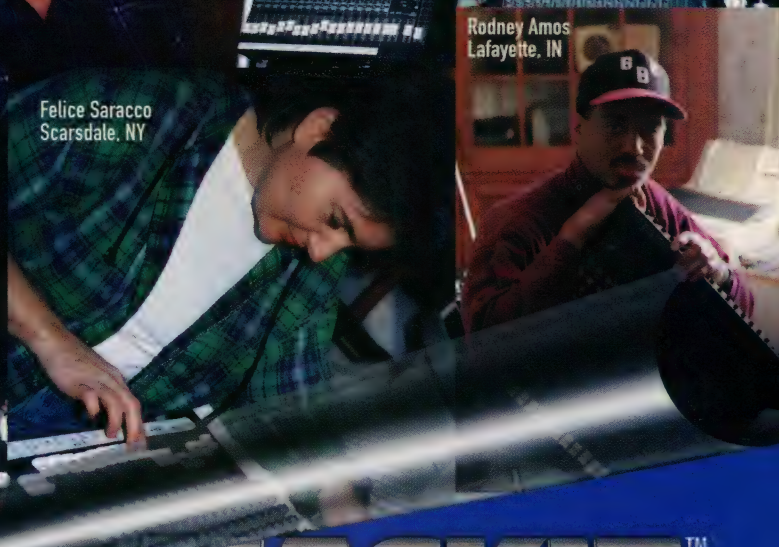
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select column in the track window, and a pop-up box will display all 128 GM patch names, making it easy to choose the sound you want. If you're not using a GM module, simply scroll through the numbers in this column to select the program change you want assigned to the track. In the event edit pop-up, however, the GM default names create a logjam. If you should want to insert (and perhaps later edit) program changes within a track's data, rather than assigning them to a track as a whole, Orchestrator won't let you view the correct patch number; it *only* shows the GM name. When we got around to reading the README file, though, we discovered that you can create your own list of patch names for each synthesizer. This feature is accessed by editing a text file rather than within Orchestrator itself, but it's there if you need it.

Orchestrator's notation output is very primitive: no lyrics, no triplets, and no control over page layout. The program will make a stab at splitting a track into independent stem-up and stem-down parts on the same staff, which may improve the readability of a part that has sustaining chords below a melody. It may also lead to rests being splotted down on top of noteheads and stems. The only way to mix treble and bass clef parts in the same score is to select "auto" for the clef setting; this will cause any parts that cross the split point (a global setting) to be transcribed on piano-type grand staves. You can size the notation at less than 100% prior to printing, but curiously enough, the only effect that this setting has is to reduce the screen display so that it's unreadable. The graphic image still prints out at 100% magnification.

Conclusions. While it won't satisfy the needs of high-end users, MIDI Orchestrator Plus offers plenty of bang for the buck. It's well designed and easy to use. Overall, it's not as strong a sequencer as Cakewalk or Cubasis, but it does have *some* form of notation printout, and the clock resolution is better. ■

CONTACTS

Bebop Systems, dist. by MIDI Source, Box 550363, Dallas, TX 75355. (214) 328-2730; fax (214) 328-1092.

Big Noise Software, Box 23740, Jacksonville, FL 32241. (904) 730-0754; fax (904) 730-0748.

Dr. T's Music Software, 124 Crescent Rd., Needham, MA 02194. (617) 455-1454; fax (617) 455-1460.

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Passport Designs, 100 Stone Pine Rd., Half Moon Bay, CA 94019. (415) 726-0280; fax (415) 726-2254.

PG Music, 266 Elmwood Ave., Suite 111, Buffalo, NY 14222. (800) 268-6272; fax (604) 658-8444.

Softronics, 5085 List Dr., Colorado Springs, CO 80919. (719) 593-9540; fax (719) 548-1878.

Steinberg North America, 9312 Deering Ave., Chatsworth, CA 91311. (818) 993-4091; fax (818) 701-7452. Europe: Steinberg GmbH, Eiffestr. 596, 20537 Hamburg, Germany. (040) 21-1594.

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In each issue throughout our 20th anniversary year, Keyboard will profile an artist whose work has strongly affected the way we make our music. This month we pay tribute to Wendy Carlos, who introduced the world to the sound of the synthesizer.



BY ROBERT L. DOERSCHUK
PHOTOGRAPHY BERND AUERS

WENDY CARLOS

the magic in the machine: reflections from the first great modern synthesist

For me, the synthesizer era began one night in '69. It was nearly midnight when I arrived at my friend Brian's apartment; he had asked me to come late, and alone. I rang the doorbell. Slowly the door opened to a darkened living room. I walked in; the door closed behind me. For a few seconds, all was quiet, except for the sound of a needle dropping onto an LP somewhere in the shadows.

And then something familiar — the joyful opening to the "Sinfonia" from Bach's *Cantata No. 29* — filled the room. But it wasn't the traditional orchestration: organ, trumpets, oboes, strings, and timpani. The sounds Brian had gleefully unleashed were like nothing I'd ever heard. Their power was undeniable. Yet their source, at that moment, was inexplicable. There was a keyboard feel to the music, but for all the experience I had had with pianos and organs, this instrument was a complete mystery.

By the time I left Brian's place, I had learned what a synthesizer was. I had a taste of its unique characteristics. And I felt a premonition that this music, *Switched-On Bach*, was about to change the world.

Earlier in our "12 Who Count" series, we profiled Bob Moog, whose instruments triggered the electronic revolution in keyboard music. This month we honor Wendy Carlos, whose *Switched-On Bach* revealed the expressive potential of the synthesizer, and whose subsequent work defined technical and musical standards

that few electronic artists have approached.

Perhaps the Columbia Records publicity team overstated the case when, in promoting one of Carlos's albums, it announced that "the synthesizer is slowly overtaking the guitar as the world's most popular instrument." But they were correct in identifying her as the fountainhead of accessible electronic music. Before *S.O.B.*'s release, sci-fi gimmickry and abstract academic exercises were the provinces to which musical electronics were relegated. Part of the reason for this was technological: Performance-oriented synthesizers were nonexistent. Even so, Moog's idea of coupling a keyboard to a network of oscillators and sound modifiers was only a first step. In order to have a lasting impact on the way we make and appreciate music, the piano needed Liszt, and the synthesizer needed Carlos.

Specifically, it needed an artist with her feel for music and appreciation for technology. She was precocious in both fields, composing a *Trio for Clarinet, Accordion, and Piano* at age ten and winning a Westinghouse Science grant for building a small computer four years later. Carlos studied both physics and music at Brown University, where she also gave a few informal lessons in electronic music. Her scientific and artistic interests intertwined during graduate studies at Columbia University: While apprenticing with composer Vladimir Ussachevsky at the Columbia-Princeton Electronic Music Laboratory, she wrote two pieces, *Dialogues for Piano and Two Loudspeakers* and *Variations for Flute and Electronic Sound*, both of which were recorded and released on the Turnabout label.

In 1966, Carlos began working with Bob Moog to develop a performance-oriented synthesizer. The result of their interaction, a modular, monophonic, keyboard-controlled machine, gave Carlos the tool she needed to explore the possibilities of a populist approach to electronic music. The following year, working with Rachel Elkind, she pieced together her extraordinary set of Bach pieces, which Columbia Records released in '68 as *Switched-On Bach*, the cornerstone of their "Bach to Rock" publicity campaign.

Its impact was immediate: Sales quickly topped one million copies. *Newsweek* took notice and pinpointed the synthesizer as "the Steinway of the future." Other projects followed, including an inevitable string of Baroque goodies in electronic dressing: *Switched-On Bach II*, and *The Well-Tempered Synthesizer*, a sampler's delight of works by Monteverdi, Scarlatti, Handel, and Bach. As the titles suggest, there was a playful spirit in Carlos's interpretations, one which acknowledged the novelty of her approach through witty timbral turns. But there was serious artistry too: The brilliant Bach interpreter Glenn Gould delighted in her work, calling *Switched-On Bach* "the record of the decade."

And there was more to Carlos than a place on the Bach bandwagon. In 1971 she scored Stanley Kubrick's *A Clockwork Orange*, whose dark and ominous impact enormously influenced young filmmakers and musicians. *Sonic Seasonings* followed in '72, with natural and transmographed sounds harmonized in a blend that presaged new age music. Then, after doing the Bach *Brandenburg Concertos* in 1979, she concentrated exclusively on original music for a number of years. These projects ranged from another soundtrack, for the ahead-of-its-time Disney thriller *Tron*, to *Digital Moonscapes*, whose synthesized evocations of acoustic instruments put many a sample-based pseudo-orchestral disc to shame, and *Beauty in the Beast*, an adventurous exploration in exotic tunings and multicultural interplay, regrettably out of print, which Carlos still refers to as "my only really important record."

In the late '80s, a circle of sorts was completed as Carlos turned again to the classics. Her decision to tackle Prokofiev's *Peter and the Wolf*, in partnership with "Weird" Al Yankovic, showed the ironic side of her humor: Who else would adapt for electronics a piece written to introduce

kids to the traditional orchestra? Then, in '92, she took a fresh look at the album with which she had changed the face of music 25 years earlier: *Switched-On Bach 2000* re-examined much of the material from *S.O.B.*, casting it in hues more brilliant and shaping parts more meticulously with the technology of a more recent time. The most ambitious track on the album, though, was her version of the *Tocatta and Fugue in D Minor*, which hadn't appeared on the first disc. Though faithful to the feel of organ performance, her arrangement brilliantly illuminates each line in textures that lead the listener from bursts of pixieish caprice to shadows of imposing solemnity. This, animated by a sense of real-time phrasing and dramatic dynamics, turns Carlos's *Tocatta* to, as she herself described it, "a timbral *tour de force*."

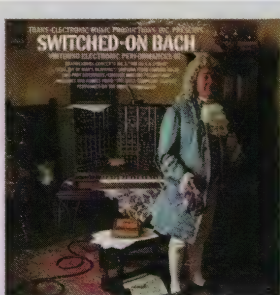
While all of this was going on, of course, synthesists were sprouting all across the musical landscape. Some followed her footsteps through the classical minefield; others focused on live performance. But all were in the synth arena because she had preceded them there, preparing the public's ear for new sounds and showing musicians how fruitful it could be to embrace new technology. Perhaps it would have happened without Carlos, but certainly much of the music wouldn't have been as inspired.

More important to many of us is the fact that, without Carlos, electronic music might not have dug as deep into the musical mainstream as it has, a point she admits not fully realizing until a few years ago. "I was giving a talk at an AES [Audio Engineering Society] digital music conference in Los Angeles," she recalled one night amidst a clutter of books and cats in the kitchen of her New York loft. "At the end, I told the conference that up until recently I had always felt like the kid in the Dickens *Christmas Carol*, staring in at the geese and the turkeys and the plum pudding, with my fingers and nose up against the glass, being an outsider. But now it's clear that the next important steps in music are going to take place within *this* domain of ours, and that we are on the arrow that's pointing toward the future. We are no longer outsiders. We're on the main branch. But what are we on the main branch of? The hybrid of technical and musical knowledge; both are necessary."

Carlos has several irons in the fire these days: an instrumental project, possibly based on *A Clockwork Orange* but updated with some ambient/techno elements, a series of a *cappella* studies influenced by early polyphonic church music. But on the night of our visit, the conversation began with a look back, to the moment when the spark that would one day set music ablaze first flickered in her imagination.

What was the first piece of electronic music you ever heard?

The first exposure I had was from a friend who brought me a recording of Pierre Henry's *Veil of Orpheus*. I was 15 or 16, about the age where maybe late starters nowadays begin listening to the technological music of our time. But my exposure was more eccentric because I didn't know this type of music even existed. *Veil of Orpheus* is a theatrical melodrama with many clearly-staged details: voices talking from the distance with echo, manipulated piano sounds, some oscillator sounds. In some ways it has roots in radio production as much as in music. At the time, it was presented to me as though it were being done by people at the Brown University Audio Research Laboratory. I asked an older friend who was going to Brown if he would find this laboratory for me. He went all over the campus looking for it, then came back and told me he didn't think there was such a place. And indeed there wasn't; it was somebody pulling my leg. So, kind of as a smart-assed answer and also because it seemed like a fun thing to do, I produced a *musique concrète* thing, using my parents' piano and some recordings of test tones that I had, howling into a microphone and feeding it through echo from the piano soundboard with the damper pedal held down, and copying it backwards from one tape to another and overdubbing other parts with tape-delay echoes.



A SELECTED DISCOGRAPHY

A Clockwork Orange (sound-track), Warner Bros.

Bach's Greatest Hits, Vols. 1 & 2, Columbia.

Carnival of the Animals & Peter and the Wolf (w/ "Weird" Al Yankovic), Columbia.

Digital Moonscapes, Columbia.

Switched-On Bach, CBS Masterworks.

Switched-On Bach 2000, Telarc.

Switched-On Brandenburgs, Vols. 1 & 2, Columbia.

I had fellow students tell me that I wasn't a serious enough composer because if I answered the question of what was more important, life or art, I would say, "Life, obviously." Does that make me less of an artist? They say yes. Myopia.



Very primitive, but that was the technology that was available. What Vladimir Ussachevsky was doing with Otto Luening at the time was not all that different.

Did electronic music immediately seem like something you would pursue in your own music?

Well, it certainly wasn't at that time something that I wanted to do for the rest of my life. But it was fascinating. From that point on I started fooling around with tape-recorded kinds of music. When I finally went to college and decided to get into electronic music, I was already experienced at producing quite a few of these things in my parents' basement rumpus room.

How did the process of incorporating sounds beyond those generated from traditional instruments affect your creative method?

Although I've been playing the piano since age six, somewhere in my brain I'm hard-wired to be a timbre person. Orchestration was one of the things that moved me into writing music, which is why I haven't written a lot of solo works for any instrument: because there's not the interplay of timbres. The electronic medium seemed to lend itself very nicely to color, to the interplay of a muted sound and a bright but quiet one with one that's more rounded but loud, with a low-pitched sound that has very little fundamental but stronger harmonics in the upper region,

which is the way acoustic instruments tend to interact. The areas of acoustics and physics, therefore, come into it, and the skill of orchestrating for instrumental ensemble comes into it. It's a misconception that the electronic medium is inherently all that different from regular orchestration.

Did orchestration classes in college have an impact on your timbral approach in electronic music?

No. Taking orchestration was nothing more than picking up a skill. You'd learn that this instrument has this range. When it's in this part of the range it tends to be loud. Over in this part it can't play loud at all; it gets covered by the other instruments. It has to breathe roughly this amount of time. Or it doesn't need to breathe at all. It's only natural that you benefit from anything you do that broadens you and gives you the ability to think in a somewhat different way or develop a skill at some particular thing. But it's hazardous to consider things that might appear to be disparate to be essentially disparate. I don't find one skill to be something that sits in a little box, which is only opened when you're dealing with one particular thing in your life. It all flows together, like a batch of chocolate chip cookies I once made with way too much shortening. You don't have individual cookies anymore; you have one big cookie. Even having a degree of proficiency in a computer graphics program might allow you to reshape notes on a graphics-driven MIDI sequencer with finesse and artistry, because of the background you'd have with making beautiful shapes applied now to editing velocities and MIDI values.

Your point is that you tend to draw more from the experience of life as a

whole than from disciplines isolated from the context of life.

I had fellow students tell me that I wasn't a serious enough composer because if I answered the question of what was more important, life or art, I would say, "Life, obviously." Does that make me less of an artist? They say yes. Myopia.

Sampling technology has perhaps drawn life and art closer together by turning all sounds into potential musical material.

I don't think it's accurate to suggest that this is something that's happened only very recently. I guess for the mainstream it has, but *musique concrète* made that possible before sampling was a convenient tool. There's a film from the '40s in which Jack Benny is a piano tuner. He'd hear a brake squeal or a doorbell ring, and he'd say, "Oh, F. Oh, B_b." This analysis or dissection of real-world sounds is probably a good experience. It can put you in a sharper frame of mind for working in the musical field.

You've expressed a more charitable attitude toward sampling in recent Keyboard interviews.

Well, through working so much now with the Kurzweil K2000's excellent VAST system, I've come to realize that that particular instrument, and a few others like it from other manufacturers who are working in this direction, is removing the sting of what made sampling so onerous in the past. It's now turning into something much more like *musique*

concrète, where you can take sounds and plastically mold them with mini-studios that contain all of the kinds of things one had in a Moog or at the Columbia-Princeton Electronic Music Center. You can squeeze out variations on these sounds so that the sample is no longer a one-dimensional item but allowed to react differently to MIDI gestures such that you don't end up with a canned and dated event that sounds exactly the same every time you use it but instead becomes part of a real synthesized voice. By putting a number of these together, you can collect a family of them closely spaced to handle the pitch axis and put others together to handle the volume. It can't be just that the sound

gets louder; it's got to timbrally shift. On the Kurzweil FS-150, an additive machine, for example, you can hear that a loud piano that's faded down on the console so that it doesn't play back very loud sounds different from a soft piano that's boosted on the console so that it's at the same loudness. The 150 has that quality, but the earlier sampled pianos all sounded the bloody same.

So you've always objected not to sampling per se but to the technological limitations and limited applications of sampling.

I was angry that from what I heard that the instruments were capable of doing, and from playing with them myself, they boxed me out

from all of the expressions that I took as a given in the electronic medium. Obviously, I'm not the only one waging this battle. A lot of us believe that electronic music should be *expressive!*

In fact, Digital Moonscapes would indicate that the theory of using sounds from outside the traditional idea of what's perceived as music isn't a problem for you.

Those sounds were all additive, plus complex FM-style sounds.

Which you could fully control.

That's why I liked them. I'm all for the idea of resynthesis with maybe a big additive engine that has a thousand or so oscillators that can be built from an analysis of some existing waveshape that you've refined in a more sample-based machine and then taken apart. That could be morphed in a *real* morph, as I understand it, so that you have something halfway between a xylophone and a cello. What does that mean? It certainly does not mean mixing the two together and then blending them with a middling attack. It's got to be that, at the essence, you get to the electrons, protons, and neutrons that make up these sounds and tear them apart to the extent you need to. Not to say that you should waste a lifetime doing it, but there should be convenient and musical ways to move these particles around, under your control as a musician. That is not only a good thing; it's what we're all eventually going to have to consider. It's at the heart of sound.

What path of development would be most useful for electronic music at this point?

The healthiest direction is the one that Kurzweil seems to be following, which is hybrid. The idea of hybrids with instruments is that we can embrace many styles of making sounds, which ought to be a liberating experience. Modular is a good way to think. If we could plug in a module that uses the kind of controllers we want to use, as long as there are enough of them to define the pitch, the loudness, the timbre, the way the vibrato comes in and out, and a couple of other parameters, that's enough. Once there are six or seven things going, you've got a genuine instrument on your hands. Then you'd have a choice of sounds through what I call engines within a particular machine. You'd have an engine that takes in sounds from a microphone as samples, which you would treat as a waveshape or raw material to be modified. Another engine would do modifications, much like the old Moog and other analog synthesizers did, with filtering and distortion and cross-modulation. Then you'd have engines that are closer to the FM process or to the phase modulation of the Crumar GDS, so that these waves, be they sine waves and triangles or sampled drums and voices and car brakes squealing, can be subjected to these sorts of processes. Then tie it all together with some kind of additive thing so that you can have the ability to pop any of these things into a format where you can take everything apart, down to its overtones.

What role do you see for physical modeling in this scenario?

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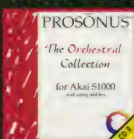
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It should be part of the overall picture, although I personally feel that the modeling approach is another *cul de sac*, much as FM was. If there was software in this system that would allow the performer to put in the qualities that happen when a woodwind player bites the reed, or a brass player bends the mouthpiece into the upper lip a little more or spits a bit into it as a sharp attack, or the percussionist hits closer to the rim of a drum head instead of more toward the center, these kinds of modifications could be handled much more elegantly controlling an additive engine than through the modeling technique. I don't think the goal should be to develop disposable forms of syn-

thesis, which might be where the Yamaha VL1 eventually leads. What the VL1 is pioneering, which is most admirable, is to make a real performance instrument. But that can be handled with additive, and be more open-ended and less chaos-theory-unstable for it.

Maybe Yamaha's thought is that breath is the most fundamental real-time interface, especially for simulating wind instruments.

But that leaves out all of us keyboard types who would prefer to have a manual transducer, something like an Ondes Martinot, instead of using our lungs, which if you're not a singer or a wind instrument player is not going to work very well. It's something that you've not trained

for all your life, so you're gonna sound like an amateur. I'm complaining in this case because, for arbitrary reasons, Yamaha is cutting off the availability of something that Kurzweil now plans to do, to give you many ways of performing these same tactile things that the VL1 does only through breath.

The type of interface you're describing still requires a keyboardist's discipline.

Not the way I envision it. I see other types of transducers besides the keys. The controller type should be left as a matter of personal preference. Let them all be available and pick the one you're comfortable with. But don't be so literal-minded that we adopt only a model based on a physical construction that happened to bear fruit in the last few hundred years, when people first learned to make good-quality woodwinds or cellos or horns. Take a synthesis approach and leave the task of tying in the features that the performer will control to a *shell* which *ad hoc* can be modelled from existing instruments as parameters to control blocks of oscillator changes of the type that live instruments have. The way that a cluster of overtones, say, can be changed should be handled by software, not through the onerous routine of going in and saying, "I want to make the 15th harmonic a little sharp and maybe a little softer and delayed in time a bit." Additive could be easy to use. Easier than models.

You might not be able to manipulate at so fine a level with this type of interface in real-time as you could through more meticulous methods in the studio, but the results would be comparable.

Well, don't forget that we are constantly switching from right to left hemisphere, back and forth between the intuitive, generalized, non-verbal side and the specific, the analytic, even in some cases the mathematical. Certainly the modeling methods being used in the VL1 are essentially mathematical. I'm just saying, give us full access to all the overtones. Let the people who develop the right skills take apart performances of the past or analyze what musicians are doing and write new code to allow us to have shells around this otherwise cumbersome collection of overtones with amplitudes of harmonics moving all over the place. Let these things be controlled by intuitive gestures. A musician learns to express variations of the timbre by hearing the moment. Movements and gestures and muscle changes and breath pressures and positioning of hands and fingers should shape the sound, so that there is none of this horrible dullness that a lot of electronic music has, the sting of the frozen-fossil sound that's exactly the same every time it's heard.

Do certain developments, such as algorithmic composition, impede efforts to rid electronic music of that sting?

Quite often. We've tended to give over chores to our computers a little too willingly. I remember when Annemarie [Franklin] came into the studio, shouting at me because I was using one of the computer algorithmic composer



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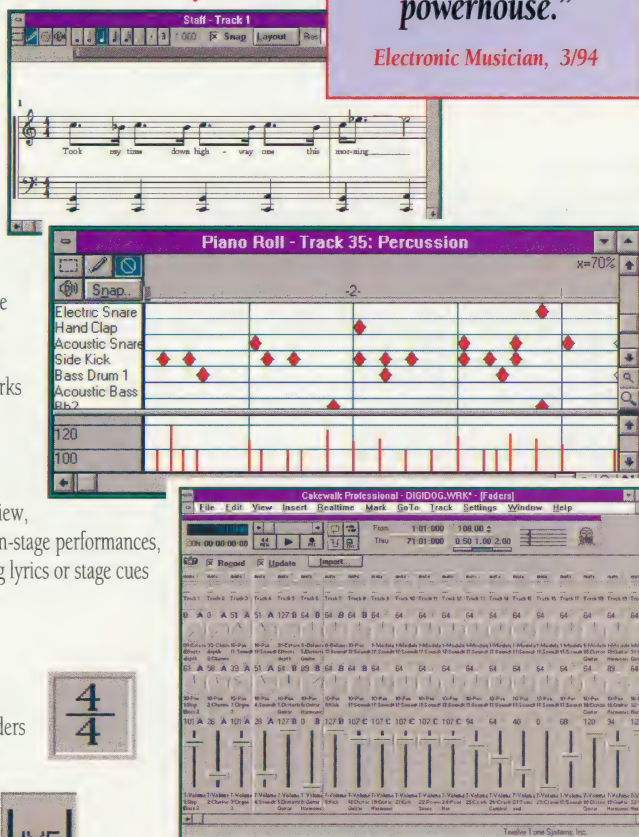
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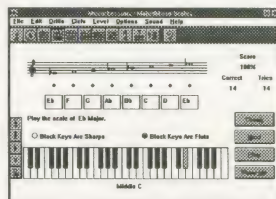
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programs. She said, "My God, you sound exactly like everybody else right now!" In the end, I realized that I need to write out every note myself. Passing the buck onto an algorithm isn't the way to do it. To me, random numbers produce randomly dull music. Remember *The Iliac Suite*, the Lejaren Hiller experiment in the '50s? Fascinating, but it was dull music! Before I got into college, I wrote a small program that composed four-part inventions in the style of Bach, using all the rules. They ended up sounding like something written by a student who had just taken a few weeks of modal counterpoint and Bach harmonization theory. Algorithmic composition looks pretty bleak.

At a level closer to the trenches, what about quantization?

Jeepers, it would be highly myopic to suggest that quantization is an asset in any sense. I'm never a fan of anything that tends to make music less expressive, less flexible, less human. Those things are very important. That's the whole reason why we did *Switched-On Bach*. We started that record because we were afraid that if we did all of the things we wanted to do with a synthesizer, people wouldn't understand it. So we thought, "Since somebody has to be tutoring, we'll do it. It's no big deal. We'll just show them that this is a nice method of making traditional-sounding human music, with regular chords and melodies. No reason in the world that it has to sound like what the medium has been limited to, more or less, up until now."

So Switched-On Bach was a deliberate effort to reach the broader public.

Absolutely. Of course, it was never expected to do what it did. It was merely intended to establish credentials that we could play music electronically, so that even if the next melody we play is with a strange timbre, it still is a melody. Don't lose sight of that, just because the novelty of the timbre might make you think this is all somehow intimidating and weird and unrelated to mainstream music. It is mainstream music.

Switched-On Bach also planted the seed of what eventually became the home studio phenomenon.

Yeah, but computers did that too. I can't take credit for this.

But if you said the word "musician" 25 years ago, you imagined someone who went to a gig and played onstage, or someone who composed at a piano so that other people with instruments could play something new. Now, at least as far as our readers are concerned, the word suggests someone who gets up in the morning and goes to work right where he or she lives, and a lot of that stems from your example.

I hadn't thought of it that way before, but you're right: People's definitions have shifted. I sometimes find it stifling to some extent to be a studio person. I wish we did more interactive work with other musicians. If it has to be done electrically, with modems, okay. But somehow I would like to see more interaction among musicians who have the new technology.

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You've speculated in the past on the possibility of playing live.

Maybe it'll never happen. Nobody has made a good offer. I have hopes to work with Jon Anderson, who came by to see me a couple of years ago, but we still haven't gotten working together in parallel. Our methods are a little dissimilar. I think he does more intuitive things over several days. It isn't the tedious chipping-away approach that I take, more like a sculptor. Yet we share a real simpatico feeling. Some of the music he's been doing recently is very close to things that I've been doing. But we still haven't found a way to make it work together. That's the saga of the times. I'm finding, to my disappointment, that it's easier *not* to collaborate with others than to collaborate, and that it was easier to collaborate in the acoustic music days.

Is that a byproduct of the home studio routine?

Of course it is. But on the other hand, it also makes music part of the vernacular again, like it used to be when kids would take piano lessons and practice on Mom's upright, when music was something that was *done*, before radio and television took over as entertainment. In the evening, after dinner, what did you do? You would read poems to each other, or act out vignettes from famous paintings and have people try to guess which painting it was. Then somebody would play the violin or do some singing. Making music is not as much the passive experience of listening to others, so long live the home studio. There's nothing healthier than to make music an experience of everyone, so that kids maybe can read at least a treble clef melody in C. A little musical literacy would hopefully make the audiences of the next generation more hungry for gourmet music, because their tastes would be elevated through the awareness and sophistication you derive from making music, so that they won't be happy just hearing a drum machine go *tunka-chunka, tunka-chunka*, on and on: a 100-percent, fast-food, fatty musical diet.

The scenario you describe refers to a time when there were clear divisions between what you might call high art and folk art. . . .

Not at all. *The Magic Flute* was a real people's opera, if you want to call it that. The royalty was paying the tab, but people in the street were humming tunes from the latest great operas.

But in the States, let's say, for people who listened to blues musicians or The Grand Ole Opry, music served a folk purpose. For higher purposes, they'd trot in Rachmaninoff or Rubinstein.

Yeah, I see what you mean.

In the twentieth century, though, recording democratized music in the same sense that technology continues to democratize it. Suddenly Louis Armstrong, essentially a folk musician, could record in the same studio used by Horowitz. So a lot of the music we might describe as "bad" might actually be misjudged because we're applying high art standards to something rooted more in folk tradition.

As much as I've been misquoted as though I were an elitist, I think it's obnoxious to diss

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many kinds of music on merely stylistic grounds. Why shouldn't the blues as played by Louis Armstrong be as much art as something from a Romantic German, late nineteenth century?

What about rap and other forms of sequenced dance music you've sometimes criticized?

In rap, from a musical point of view — music only — there's very little happening. If you're that circumscribed, there's not much room for Art with a capital "A" to evolve. But blues is not limited in any way like that, so it's demeaning to even discuss whether it's low art whereas Ravel, who happens to be one of my patron saints, is high art. If it's badly played, if it's poorly thought through from a compositional point of view, if it's a C major triad for four-and-a-half hours, then cynicism is appropriate. You could put yourself up as sort of a Dada hero, maybe like John Cage, and say, "Nyah-nyah-nyah, you take yourself so seriously with all that 12-tone stuff, and I'm telling you it's all a crock." To some extent, that kind of a person is necessary. But should we applaud snobbery? Only in the sense of quality. What you can be elitist about is quality. If somebody uses the democratically available tools and does an amazing job with them, the type of elitism that acknowledges that they've done something better than average is not elitism at all.

In your discipline, you have defined a level of virtuosity that people can recognize and attempt to realize themselves. It is closer in spirit, in that sense, to the high art of Liszt than to folk art that assigns a lower priority to technique.

Thanks. Now, is that elitist? No, it's my obsessive/compulsive behavior in that I refuse to let things go unless they hit a certain level. On the other hand, some people I know drive me bonkers because they insist that every gesture has to somehow be gilded and put on the shelf as Art with a golden capital "A." Well, what's wrong with good? I tend to not let something go until it's as good as I can make it. That, to me, is good. But who can say?

A painter I know insists that none of her works is ever really finished, though there comes a time when they have to be delivered.

That's when you stop. All works of art are abandoned; that's a priori.

This feeling of never being done is perhaps one thing that separates artistic performance from recreational or folk performance.

Well, nobody ever made you wear the hair shirt. You can just be an ordinary person, you know.

But some people become artists more, it seems, by necessity than by choice.

That's true. And not in the neurotic sense. The itch and the prewriting are already there.

For artists who recognize these kinds of standards, the challenge might be to reconcile that with the persuasive power of music that doesn't aspire to virtuosity. To what extent does an appreciation for high art make it difficult to appreciate low, or folk-based, art?

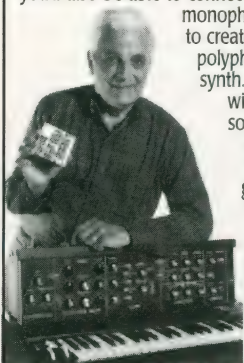
That's one of the funniest questions of culture and art. In one sense, it's circular reasoning to say, "If a lot of people buy this record and listen

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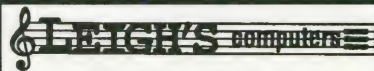
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to it a lot of times, there must be some very important communication taking place, so it must be very sophisticated." That's a populist definition of quality. Then you can see somebody doing something very difficult, like Horowitz playing his arrangement of "The Stars and Stripes Forever," where it sounds like four hands going. Even if you're not a musician, you can see that there's a level of physical dexterity that reaches a point where you have to say, "That's a whole other stream out there." If you refine, as Ravel would do, to the point that there's not one extra note, there's something that must be acknowledged. Even if they're playing "She's Too Fat for Me" on a homemade concertina with a kazoo

attached, but with a high degree of well-honed skill, that requires a nod. For different members of the audience, a different balance between these things is expected. You hope to live in a society where you would gain respect if you could as an audience member say, "Hey, listen to that. Something really magical occurs in the middle of this piece." But this gets us into the quicksand of aesthetics, and that can't be described any more than you can teach somebody how to compose. You can teach someone harmony. You can teach them counterpoint. You can teach them orchestration. But you can't really teach someone how to compose.

What about teaching improvisation?

It's the same gift. David Sudnow's *The Ways of the Hand* tried to explain the inexplicable, which is the way you real-time compose, which means that you don't have the chance to go back and edit. Improvisation is the first level of composition. In fact, it's the heart of composition. If you have composition without innate improvisation, it's not really composition. Better hide behind your computer, or some jargon.

Stravinsky used to refer to composition as frozen improvisation.

And so it is. But the blue pencil does play a role too. Remember that tragic outcry from a fatally sick Ravel at the end of his life: "There are so many wonderful pieces inside me that I can't get out!" Ouch! My best musical ideas usually come to me through my inner ear. I frequently hear symphonies in my head as I'm trying to go to sleep. That's not kinesthetic. That's not the hand guiding; that's the inner ear guiding. If I'm sitting at the piano to follow what I'm hearing in my head, I'll try to play the notes I'm hearing. Improvisation can also be musically guided, but try thinking of it as if totally apart from the instrument you're playing, because then different instruments would clearly make for different kinds of improvisation.

Well, in fact, they do.

Of course, but there's another one. I'm trying to refer to the one that Beethoven or Bach would have done and then written down as part of the composition process. Then they might say, "You know, this needs another improvised line to tie these two ideas together." Think of that scene in *Amadeus*, where Mozart says, "That doesn't really work, does it?" Then he comes up with a much better idea, using the same chords underneath. The same chord changes produce a better effect when thought through another way. That's how I try to use improvisation. I simply don't much care to let *only* my muscles and happy accidents guide my improvisation.

You're not too interested in jamming.

Well, jamming is sometimes awfully "top of the head." As I understand it, jamming frequently stays on the level of the clichés and riffs being strung together, at least on the nights when the magic ain't happening.

Still, your description of how you draw from your inner ear seems to define a compositional process that's distinct from real-time improvisation.

The improvisation is what you do on the first pass. You have the idea, you hear where it's leading. Yes, there's the excitement of doing it on the fly. That's why people love to go hear opera singers — because their voices *might* break. There's a circus quality to it, as Glenn Gould pointed out. But that's different from music *qua* music. Music doesn't need that theatrical side, although of course it must move you in other theatrical, humanistic senses if it's to be effective. Otherwise, it's the dull academic stuff we've talked about. It cuts itself off from the human experience, and therefore it has no emotion, and therefore it bores people. And therefore it ain't for me. ■

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VALLEY OF THE KORGS

A PRE-MIDI SYNTHESIZER GALLERY

Many renowned and popular electronic music instruments have come from Japanese manufacturers in the past 20 years. One of the most consistent and innovative companies during that period has been Korg, who introduced a number of successful products before finally scoring the blockbuster synth of the decade in the M1.

As we at *Keyboard* celebrate our 20th anniversary, we thought it would be timely to look back on some of the early Korg instruments that you may or may not be familiar with. What we discovered was that one man in particular was behind many of these products.

His name is Yasuhiko Mori. He majored in electrical engineering at Japan University, and began working for Korg three years after graduating. Strangely enough, Mr. Mori wasn't with the company when it released the M1, because he left Korg shortly after the introduction of the Poly-800 (Korg's first product with MIDI) to establish Zoom, the effects processor manufacturer. "I went to Zoom," Mori told us through an interpreter, "because I wanted to make a different kind of products than Korg was making at that time." Today he's back at the company whose groundbreaking products he helped develop.

In January 1994, we met with Mr. Mori, his interpreter Shungo Fujiwara, and Charlie Bright of Korg's U.S. R&D facility in Milpitas, California, to discuss some of the early Korg synthesizers,



The Maxi-Korg, also known as the 800DV, was introduced in 1975. The "DV" stood for dual voice, making it one of the first duophonic synths on the market. (A two-voice mod for the ARP 2600 preceded the Maxi-Korg by a couple of years.)

BY MARK VAIL

VALLEY OF THE KORGS

organs, and other musical products, some of which you'll see pictured on pages 67-71. Does Mr. Mori still have any of these products? "Yes, at the company we have many," he answered, again via Mr. Fujiwara. "But they're too expensive for me to own personally."

We asked what the chances are of Korg reintroducing some of the popular products from its past. "Some of these analog instruments with discrete circuits would cost a lot more to produce than the digital instruments we make today," Mr. Mori explained. "In some areas, the technology has been improved and products can be made more cheaply, so there's no reason to go back."

What was Korg's original product? Believe it or not, it was a mechanical rhythm machine that read holes punched in a circular roll of paper.

Finally, we asked if Mr. Mori considered himself a musician. "Not really," Mori responded in English. "I play the vibraphone and trumpet." ■

Dual oscillators and a ring modulator were two of the features to be found on the inexpensive 770 monophonic synth. It came out in late '76.



Memento Mori: Yasuhiko Mori estimates that only 30 to 50 of the PS-3300s were manufactured, because it was too expensive for many musicians to afford. Fumio Mieda, who is on Korg's board of directors, designed this modular polyphonic synthesizer, which took several years to develop. In fact, one part of the PS-3300 became the MS-20 (shown to the right). Today, a PS-3300 is worth from \$500 to \$5,000, depending on its condition.

Many more PS-3100s (300 to 600) were made than the much more expensive PS-3300. On the used synth market, a 3100 can bring from \$300 to \$2,000.

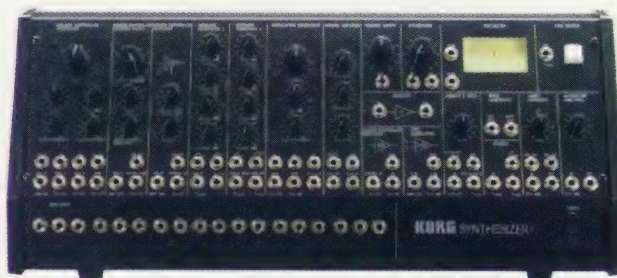


The small, modular, monophonic MS-20 (shown here) and its smaller brother, the MS-10, followed the polyphonic PS-series synths, and were very popular in Japan. Both were influenced by Bob Moog's modular synths of the '70s. These days, an MS-20 is worth \$100 to \$500, and the MS-10 \$50 to \$400.



The VC-10 looks very similar to the MS-20, but it provided vocoder capabilities, incorporating a 20-band analyzer and 20-band EQ. Unlike most other vocoders, the VC-10 had a built-in polyphonic tone source, which was triggered using the 32-note keyboard. When it was introduced in 1978, its suggested retail price was \$1,299, not including the microphone.

Developed at the same time as the VC-10, the MS-50 module was mainly intended as an expander to the MS-10 and -20. Today, a used MS-50 will bring from \$100 to \$450.



VALLEY OF THE KORGS



According to Mr. Mori, "The basic design philosophy for the Korg Sigma was to develop a synthesizer for the organist. On previous synthesizers, there were many knobs. Those were really hard to control in real time, so I used a modern design that allowed the player to select a sound and then edit it." The Sigma was also known as the KP-30, and was only in production for a couple of years.



CHRONOLOGY OF SELECT PRE-MIDI KORG PRODUCTS

1968		first experimental synthesizer
1969	March	Korgue organ
1973	March	mini Korg mono synth
1974	May	700S dual-oscillator mono synth
1975	March	800DV Maxi-Korg
	November	900PS preset synth
		SB-100 Synthe-Bass
1976	March	Polyphonic Ensemble 1000
	August	Polyphonic Ensemble Orchestra 2000
	September	770 dual-oscillator mono synth
1977	September	M-500 preset synth
	December	PS-3100 & -3300 modular polyphonic synths
		PS-3010 polyphonic keyboard controller
1978	May	MS-10 & -20 patchable mono synths
		M-500SP Micro preset synth
	September	VC-10 Vocoder
1979	January	MS-50 mono patchable synth module
	February	KP-30 Sigma mono performance synth
	March	CX-3 single-manual combo organ
	November	Trident synth/brass/strings BX-3 dual-manual combo organ
1980	December	LP-10 electronic piano
1981	November	Mono/Poly Polysix
1982	March	KR-55B rhythm unit
	April	SP-80 Symphonic electronic piano
	May	BPX-3 organ bass module
		PK-13 pedal keyboard
	November	EPS-1 electronic piano & strings
	December	Poly-61 KPR-77 programmable rhythm unit

The Korg CX-3 was, and still is, a popular replacement for the Hammond B-3, because it's much more portable and makes a convincing B-3 sound. Mr. Mori and Korg's engineers used a Hammond C-3 as the model for the CX-3's sound, as well as for the dual-manual BX-3. Korg had to stop making both because the I.C. used in their production was discontinued. Thankfully that isn't the end of the story, because the Texas company Resurrection Electronics makes a circuit board to replace the obsolete SM304 chip, so failed CX- and BX-3s can be revived. (See Resurrection's ad in the Classifieds in the back of this issue.)



Mr. Mori poses with a recent addition to the list of products he helped develop, the Wavedrum.



Korg released the Trident in late '79. Mr. Mori's story of its development is as interesting as the instrument itself: "Almost at the same time as the development of the Trident, we were researching sampling technology. We made a four-voice polyphonic sampling synthesizer, but at that time we thought that this would be easier to manufacture. Actually, the Trident was divided into three parts. One was the synthesizer section, another was the brass section, and the third was the string section. The three parts can be played at the same time. We thought this kind of synthesizer was better than one that could sample."



Of all the Korg synths, the Mono/Poly is Mr. Mori's favorite. Today, this 14-year-old instrument might bring \$70 to \$300.



The Polysix was developed and manufactured at the same time as the Mono/Poly. Both were very popular in their time.

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Suggested Retail Price: \$199 per disc (Roland). Phase IV (EIII) includes all material from both, \$695.

Contact: Northstar Productions, 13716 Ramona St., Portland, OR 97236. (503) 760-7777. Fax (503) 760-4342.

Whaddaya mean, *global* instruments? These here slide guitars was played by *Amurricans*, buster. Think I don't know that?

Kidding aside, such distinctions are increasingly irrelevant, whether we're talking politics or music. The first disc of Northstar's two-volume *Global Instruments*

CD-ROM set kicks off with some very tasty blues slide acoustic guitar, complete with bottleneck vibrato and fret buzz. The slide playing was so soulful that we had to kick the guys from *Guitar Player* out of the office to get on with the review. But most of the volumes ("volumes" meaning Roland-style sampler banks, now, not separate CDs) are devoted to material that will likely be in shorter supply in downtown Lodi: bouzouki, didgeridoo, bagpipes, assorted dumbeks, and so on.

The close-miking is exquisite on the fretted instruments, but possibly the proximity effect added too much bottom to the flamenco guitar, which is so warm that it lacks stridency. The Renaissance lute is more brassy; inauthentically so, according to ER, who pointed out that it sounds as if the notes were played with the fingernail, a modern technique, rather than with the fleshy pad of the finger. The lute volume also includes a multisampled "trill" layout in which each note was performed with a couple of quick half-step pull-offs. Again, ER was critical of the authenticity: "These sound more like oud trills to me. They're not Renaissance lute licks."

Most of the multisamples are as well matched as you'd expect from a real multistringed instrument, but in a few cases (notably bouzouki and mountain dulcimer) one of the pairs of double strings was out of tune with itself, while other pairs weren't. This lends a chorused quality to one of the samples in the patch, which may be authentic but is quite jarring when you play a melody.

More phrased performances are found in other

volumes: Three short rhythmic phrases on a Turkish baglama saz, all of them accompanimental drones, are looped and given a long-decaying amplitude envelope so that they die away in an affecting manner. A four-note phrase on tamboura is looped at full-volume for background drone work. "This is *the* accompaniment pattern that the tamboura makes," ER adds. "It's what you get by drawing your finger across the four strings." The single notes on tamboura are not looped; they're allowed to bloom naturally and then die away. If you're scoring a PBS documentary about rural India or '60s pot parties, these evocative samples will be worth the price of the disc by themselves.

The koto volume contains both single-note multisample layouts of folk and modern koto, and sampled glisses. Up and down glisses are both provided. As nice as it is to have characteristic performance flourishes, we're disappointed that the booklet provides no information about the original concert pitch at which the samples were taken. ER would also have liked to hear some idiomatic string-bending from the koto.

Each volume contains a number of patches that use the same material. These are laid out in a very intelligent way — with separate stereo and mono versions, for example, so that you can load single instruments to conserve memory. While the amount of creative programming is limited, you do get to hear filter resonance on a tamboura, which is a treat. Chorused and flanged patches are also included. Phrased samples are often laid out on the white keys, with complimentary

materials (matching up and down glisses, for example) an octave apart.

While the patch programming is consistently good, the loops are another story. The single-cycle loops in instruments like the folk koto, the fiddle, and the *khene* (a Thai reed) would have been acceptable five years ago, but the art of looping has progressed since then. Also, the bottom sample in the fiddle (actually a Norwegian instrument called a hardanger) has a pronounced *whap* going into the loop. "Only two of the *khene* licks are characteristic of the way the instrument is played," ER noted. "The others just sound like somebody doodling." He also expressed a wish that the liner notes be more authoritative: "The *khene* is described as a flute, but it's actually a mouth organ with metal reeds. Nothin' flutelike about it." He prefers the more widely accepted transliteration *khaen*, by the way.

The tuned percussion in Vol. 1 is, again, beautifully recorded. In addition to steel drums and kalimba (familiar materials by now) you'll find a wonderful long sample of a Tibetan meditation bowl being rubbed. The repeated rhythmic scrape sounds almost like a loop at first, but then you realize it isn't, because the ringing tone of the bowl is getting louder very slowly.

I'm a little dubious about the sustained multisample concertina, because one sample in the melody range has really twittersy vibrato. But the bellows action on the sampled chord stabs would be ideal for an action hit in a cartoon soundtrack. Further out on a limb, wind-instrument-wise, are the "buzzers": bull-roarers and things, sampled in stereo so that they whip back and forth between the speakers while setting up a disturbing semi-pitched racket. According to ER, "The buzzers are fabulous!" He liked the didgeridoo, too.

You'll also find assorted shakuhachi licks, not to mention a bagpipe playing the whole first phrase of "Amaz-

ing Grace." The bagpipe drone note has a very long loop, which is good, but the loop has a thump in it, which is bad. The programmers missed a bet by not routing aftertouch to the drone's amplitude. I'd love to be able to make the drone swell in volume with aftertouch, rather than add boring old vibrato.

ER was critical of the gamelan volume. "There are no damped note cutoffs, an essential sound that you can't synthesize. And it's unfortunate that they didn't think to create a patch with authentic tuning," Northstar tells us that authentic tunings of some instruments are included in the EIII version of the material.

In Vol. 2, the metallophones are varied and unusual. I especially liked the bowed cymbals (somebody should do a whole CD of these!), but the crescendo gong roll and Chinese cymbals are wonderful too. The finger cymbals are sampled in mono, which is sensible since they're not a large instrument physically. Here's what's cool, though: Seven or eight adjacent keys have separate samples of the same finger cymbal technique on the same cymbal — nine open hits, followed by seven closed hits, followed by a similar group for another cymbal a whole-step higher than the first. Get the picture? All you have to do is play a characteristic rhythm and spread it in a random way across the group of keys, and you'll sound a lot like a real belly dancer.

The same multisample method is used in the African *sugu* and *chueshee* (congas), *breketa* (calf hide drum), *gome'* (hand drum), and *udu* (clay drum). Depending on the drum, you get a variety of slaps, taps, hand mutes, and so on. Some of the drumstrokes are louder than others, and the inherent volume differences are preserved in the multisample layout. At first this seems odd, as some keys make very little sound, but in fact it should make sequencing an idiomatic part much easier. If you often use congas in sequenced rhythm tracks, you'll be amazed how

much a disc like this can perk up your perc. In most cases, one or two idiomatic performance loops are included in the same volume with the individual drumstrokes. This is nice because it can give you (if you're not actually a resident of the world) a better feel for what the drums sound like when played expressively.

The talking drum volumes use the same type of layout — but so much of the idiomatic use of a talking drum relies on bending the pitch continuously during a flurry of drumstrokes that it's hard to see how you could sequence a convincing part using only individual hits. Great source samples for a modern mix, but you're not going to fool an ethnomusicologist.

Fifteen rhythm loops are included in the *udu* volume. Interestingly, they aren't in 4/4. Some hesitate, some rush forward, and one is in 7/16. Have fun using these in a dance track. Four of the five loops on Persian *zarb* are in 3/4 — another fresh challenge.

One section of Vol. 2 is devoted to combination volumes suitable for ensemble simulations. The Korean volume, for instance, includes *pook*, *samm chu li*, *koo ku mu*, *tang ku*, *kogumo*, *chang go*, clappers, and a cymbal. I'm dying, this stuff is so evocative. One complaint, though: While the patches within each combination volume are correctly laid out on the keyboard for use as a single kit (that is, each patch is confined to a small region of keys, and the regions don't overlap), only one kit is switched on in the performance. In order to play the whole kit at once, you need to do a bit of reprogramming. "A total hassle," ER concurred. And since the Roland operating system can't save the performance back to disk without also saving the subsidiary objects (in this case, 4Mb of samples), Northstar's oversight will fill up your SyQuest cartridge pretty darn quick.

We reviewed the Roland version of this material,

which is split between two discs. We're told that Northstar's *Phase IV* for the E-mu EIII includes everything on both Vol. 1 and Vol. 2. It costs more than the two Roland discs combined because the programming is more extensive. A low-memory EIII version, *Phase IV Lite*, will give you all of the same material, but in low-memory mono banks, for a mere \$199.

There's obviously far more material on these two discs than we can do justice to in one review. Setting aside the questionable looping in the sustained tones (which isn't a major issue because there aren't that many sustained tones) and the lack of authenticity in some of the licks, the two *Global Instruments* CDs are a nonstop knockout. If you need a fresh source of crisp ethnic percussion and stringed instruments, don't let the prospect of shelling out a couple of hundred bucks dissuade you. These discs will give your sampler a whole new lease on life. —JA



THE DIGITAL KITCHEN FUNKY RHYTHMS YOU CAN'T LIVE WITHOUT

SOUND QUALITY: **EEEE**
SELECTION: **EEEE**
BANG FOR THE BUCK: **EEEE**

Format: Audio CD.

Overview: Drum and bass loops for hip-hop and dance.

Contents: 60 drum-loop tracks with three to seven one-, two-, or four-bar patterns per track. 18 bass-line tracks with three to nine loops per track. Over 700 measures of drum loops and 200 measures of bass grooves. Drum-loop demo

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track. 68-1/2 minutes total.

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\$99.95.

Contact: Eye & I Productions, 930 Jungfrau Ct., Milpitas, CA 95035. (800) 726-7664 or (408) 945-0139; fax (408) 945-5712

You might be able to live without the drum and bass patterns provided on this disc, but there's a lot that could make your life more fun(ky).

Nearly everything here is hip-hoppy. The 60 drum loop tracks and 18 bass line tracks are separately grouped. A variety of styles appears within each track, 99.9% of the time at the same tempo (a couple of tracks include patterns with slightly different tempos). The same pattern often appears in multiple tracks at different tempos, which is convenient; that means you won't necessarily have to transpose a pattern (which might destroy the loop's quality) to get the exact tempo you want. The

tempo rises as you progress through the tracks, from a leisurely 83 bpm to a maximum of 108 bpm for drum loops, 104 bpm for bass loops. In other words, the music you create with these tracks will groove from slow and sassy to medium. You'll have to search elsewhere, or crank up your sampler's time-compression algorithm, for fleet 120+ beats.

"Sassy" is a good term for the drum loops. All kinds of drum sounds appear in different settings. There are TR-808 thumps and beeps, snares with gorgeous reverb tails, acoustic hi-hat patterns, purposely noisy and poppy segments, and more — everything but the kitch . . . er, never mind. GR was disappointed that the drum sounds only appear in patterns: "Too bad individual drum-hit samples weren't included. But there are some interesting uses of effects and layering."

A vast majority of the patterns are very imaginative,

even if they are sequenced. "If you're after live, human drum grooves, this ain't the disc for you," GR said. "These loops sound quantized, not like they were played live. They're very well programmed, though." I especially like the occasional brilliant and unexpected off-beat snare flurries. I also appreciate that each pattern ends with the first beat of the following measure, which makes the sampling-and-looping process considerably easier and more accurate.

On my first pass through the bass patterns, I jumped when the attack of the first note in the first pattern was accompanied by a loud, distinct pop. Further pops followed on all of the bass loops, always coming out of the left speaker only. I thought maybe they were a simulation of the pops and clicks inherent in a dirty old record. To find out what I was hearing, I called Digital Kitchen's Nate Goyer. No, the

pops aren't mistakes or pretend vinyl noise; they're metronome clicks to help you figure out the groove. Nate put them in the bass patterns as a timing reference. Once I knew that, I realized the pops do beat out quarter-notes. Thankfully, they're only in the left channel, so you can avoid sampling them by feeding only the right channel to your sampler. If you want stereo samples, you'll have to implement some kind of stereo processor. I found the clicks really intrusive, and none of the three other listeners of the CD could identify the pops as metronome clicks prior to being informed what they were. In fact, GR thought it was a waste to include the metronome clicks; he'd prefer to have stereo samples. He added, "Anyone who needs to hear metronome clicks to know where the beat is shouldn't be buying a sampling CD of funky rhythm patterns." He says he also would have preferred having

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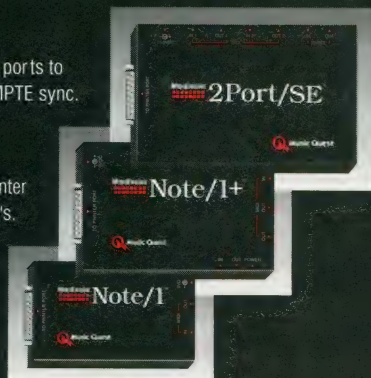
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Buttons, and 7 Faders all fully programmable; and 100 Programmable Performance Patches, storable on a 3.5" floppy disk drive.

What could make the Turbo MusicProcessor any better than fat, warm sounds and an awesome controller? How about having an on-board Graphic Editor, an on-board Sound Librarian, 2 independent DSP Effect Processors, and a powerful multi-tasking operating system with Undo, Compare and Clipboard functions? How about an on-board Sample Translator that will read other sample formats from disk (Akai, Sample Vision, Wave, Sound Designer, Avalon)? How about the planet's largest on-board Sequencer: with 250,000 events; 16 tracks 192 ppq; and background load-while-play feature? Plus a great warranty of 5 year parts/1 year labor (compare this with your typical "just-about-long-enough-to-figure-out-that-it's-not-working-properly" warranty).

Now, what do Keith Emerson, Jai Winding, Herbie Hancock, T Lavitz, Stevie Wonder, Walter Afanasieff, Jason Miles, Alan Pasqua, Bo Watson, Jeff Bova, Teddy Riley, Renato Neto, and Michael Boddiker* have in common? They're all using the sound and power of the S Turbo MusicProcessor for stage performance and recording! We'd like to add your name to our user's list! The MusicProcessor is available in three models: S2 Turbo (61 keys), S3 Turbo (76 keys), and S2R (rack-mount module). Take our challenge. Tone is everything. The **S series Turbo MusicProcessor** is so warm, "you'll think it has tubes."

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a vocal count ("one, two, three, four") as opposed to the metronome clicks.

Sources for the bass timbres include Minimoog, Roland Jupiter, and Oberheim synths, as well as acoustic and fretless bass. The latter were sampled and played on a keyboard, as opposed to being recorded by a real bass player. In any case, the patterns are killer, no matter what they were played on. As with the drum loops, numerous styles are represented within each track.

Although the *Funky Rhythms* liner notes don't give counter locations for each loop within a track, the loops are indexed, so any CD player that lets you step through the indices will allow quick and direct access to each loop. Cool and convenient.




What about licensing the loops? Don't worry, because they're license-free. Digital Kitchen asks, though, that you mention them in your cassette

or CD's liner notes, and that you send them one of your gold record plaques. In other news, we're told Digital Kitchen will be releasing a CD-ROM version of *Funky Rhythms* for the Akai S1000. It reportedly will cost less than \$200 and contain a lot of additional material.

The demo at the beginning of the disc sounds like the needle dropping on an LP on an old-timey record changer. From then on you'll hear things that inspire you to make music, and that's what it's all about. —MV



ZERO-G MO' FUNKY ELEMENTS

SOUND QUALITY: 
SELECTION: 
BANG FOR THE BUCK: 

Format: Audio CD.

Overview: Funk, hip-hop, jazz rap, new jack swing, and disco styles. Beats, individual samples of drums, keys, guitar, bass, synth, and horn riffs.

Contents: 91 tracks, 10 or more samples per track. 221 beats and fills (incl. 21 tambourine loops), 64 kicks, 35 snares, 30 horn riffs, 29 stabs, 25 cymbals. Fender Rhodes, filtered and tremolo Rhodes, Hohner Clavinet, Hammond tones, funk bass (40 open strings), synth tones, violin section, etc.

Suggested Retail Price: \$99.95.

Contact: Time+Space, P.O. Box 306, Berkhamsted, Hertfordshire HP4 3EP, England. (0442) 870681. U.S. dist. by East-West Soundwarehouse, 345 N. Maple Dr., Suite 277, Beverly Hills, CA 90210.

(310) 858-8797. Fax (310) 858-8795.

Just what the doctor ordered. Doctor Funkenstein, that is. *Mo' Funky Elements* (the follow-up to Zero-G's *The Funky Element*) will cure your mixes of that sterile, antiseptic vibe. You'll be down and dirty before you know it.

The disc kicks off with more than a hundred two-bar drum loops, all played on old, rickety drum kits in live rooms for that nasty street feel. These loops are definitely more low-down than on *The Funky Element*; the loops on the latter, while good for groovin', have more snap. Tempos in *Mo'* range from a leisurely 84 bpm up to 124. Many of these beats have a bit of a lurching, staggering feel, which might be (a) sloppy drumming, (b) the result of running the sample through a time-stretching algorithm, (c) exactly what your track needs to give it an attitude, or (d) all of the above. "Some of these

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Christopher T. • Kokomo, IN

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Dean M. • Isamsville, MD

"Owned 2 prior, love them! Once you turn it on, you can't turn it off! It's a real 'Blanket Lifter.'"

P.S. Is this thing legal in all 50 States? " Barry D. • Nashville, TN

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"Vivian Campbell and Vito Bratta spoke of it." Jared C. • Rices Landing, PA

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drummers can barely play," commented RLD, "or are trying hard to create that impression." Almost all of the loops include the downbeat of the third bar, for easier looping.

From there we move on to an assortment of kicks, snares, hi-hats, and miscellaneous percussion — some dirty and some sweet, but all very usable. The samples of single notes on keyboards are kinda dirty; also out of tune, in some cases, but that's easy to fix. Mostly you get C notes, sometimes in several octaves. The high-octave synth samples are distorted and tweezy, as are some of the Hammond notes. They're also long enough for you to program a good sustain loop. (The original *The Funky Element* had no synth notes. It had tons more short stabs than *Mo' Funky Elements*, however.)

The first batch of funky horn riffs consists of sax/trumpet lines in a laid-back, casual style. Saxophonist George Lee and trumpeter Bob Maxted are credited. (Curiously, there are no credits for the guitar or drum loops, possibly because *Mo' creator* M. J. Dunne played them himself.) You'll also find a generous assortment of sax squeals and jazzy sax lines, and more than 30 big-band section hits. Some of the latter sound as if they've been lifted off of commercial music recordings, but if so they're so short that it's unlikely anybody is ever going to track them down.

The wah-wah guitar riffs are organized by tempo and key, so that you can pick several that match and build a guitar track out of them. They're performed with a good, tight rhythmic feel and a full, mellow tone. The bass guitar samples are single notes rather than riffs, but the player zoomed in on that warm, distorted '70s tone. Slides are included, but no thumb-pops. Immediately following the bass guitar are classic synth bass tones (only one sample per tone).




After all these goodies, we get to the new jack swing loops. These are recorded,

again, with a full drum kit and some live ambience. No construction kits — take the beat or leave it. The drummer/programmer has a trick of turning the kick and snare around in the middle of the two-bar phrase, or at the very end. Aside from that the beats seem pretty straight-ahead to us, solid but not full of surprises. Guess you'll have to add the surprises yourself with the new jack snares and kicks, which sound more spicy and electronic.

The 29 "jazz rap" beats use ride cymbal, but the kick and snare still sound more funky than jazzy to me. Room ambience and full kits are standard fare here as well, but you'll hear different drums and cymbals on almost every beat. The 20 disco beats offer some new sonic elements — occasional hand-claps and bongos, for instance — as well as hotter tempos (114 to 122 bpm). Electronic percussion samples suitable for spicing up your disco satire include zaps and 808-type bonks.

This CD earns the coveted, although frequently awarded, Low Moan trophy for stylishness and swagger above and beyond the call of doobie. In other words, we *liiike* it. —JA

BILÉN-RAMSBERG SOUNDCREATORS

SOUND QUALITY: 
SELECTION: 
BANG FOR THE BUCK: 

Format: Five 3-1/4" HD floppies per series for the Ensoniq ASR-10 and TS-series synths.

Overview: Analog and digital instrument sounds for pop, rock, and dance music.

Contents: 42 instruments (15,473 blocks, 3.8Mb) in the Series 1 collection (seven to nine instruments per disk). 33 instruments (15,793 blocks, 3.9Mb) in the Series 2 volume (six to eight instruments per disk).

Price: \$28 per series, payable to Nordbanken, Sweden, Johan Bilén, account #3016 47 52 498.

Manufacturer: Bilén-Ramsberg Ljudproduktion HB, c/o Johan Bilén, Smörgatan 26, S-

412 76 Gothenburg, Sweden. 011-46-31-7769265.

Hunting for some inspired synth sounds for your Ensoniq sampler? Two guys from Sweden, Johan Bilén and Niklas Ramsberg, may have just what you need in the form of the SoundCreators Analog & Digital Series. Why "digital" is used in the name we aren't sure, because the emphasis is solidly on analog synth sounds, with only a few digital timbres scattered here and there. Currently two five-disk collections are available, and a third volume is due by the time you read this. The emphasis is on useful, playable timbres.

SoundCreator Series 1 gets off to a very good start with ColdCut. In the upper range, the timbre seems to be violin-like, except that it has a fast attack and a very brief decay. Its piercing quality should cut through any mix. The low-end response of ColdCut is also strong.

Another cool, sustaining instrument from Series 1 is AmbiPad. This soft, three-layer patch contains a monophonic element with last-note priority and a quick portamento, so that you can trill the mono voice between two or more keys. If you play chords too hard with AmbiPad, you can easily overdrive the ASR's internal circuits and cause the sound to distort. This potential distortion problem also affects a couple of Series 2 instruments, the Prophet-5-like Prophecy and Sunset Lake, a blend of plucky piccolo and soothing strings. Niklas Ramsberg informs us that the internal volume settings for these and other distortion-prone instruments have now been decreased.

Other Series 1 instruments that caught our attention were the beautiful, round-sounding Old VCF, the synth-string Balladesque, and the haunting HeavenOnMars, whose piano-like attacks are followed by a brittle echoing and wavering timbre. When you play the hugely metallic NTP Clav with both patch-select buttons depressed, it

demonstrates a technique used elsewhere in a number of other instruments in both SoundCreators collections: The mod wheel controls the sample start point. As you move the wheel upward, the sharp, metallic attack transient gradually disappears; there's still a fast attack, but it's more muted. Nearly a dozen instruments in both Series provide the mod-wheel-to-sample-start controller routing, which adds a new level of expression to your playing.

The dynamic expression of Deep Solo from Series 1 is terrific. At medium or lower playing velocities, this four-layer synthetic-Clavinet instrument features a closing resonant filter. When you really spank the keys, the sound expands in volume at the same time that tubular flanging and subtle slap-back echo effects kick in, making for a massive, powerful timbre. DB wishes it sustained longer.

Bassic Stuff from Series 2 provides a snappy, deep, analog bass instrument mapped across the keyboard in two zones so that the same pitches sound in the two octaves from C#2 to C4 (Middle C) as from C#4 to C6. (Pitches continue upward normally from there to C7, the top note on the keyboard.) In other words, there's a two-octave drop when you play from C4 to C#4. This allows you to play some two-handed bass lines that would be very difficult to execute using one hand in a two-octave range. It's odd, though, that movements of the mod wheel add noise to the sound. Niklas Ramsberg says this is caused by the ASR's flanger effects algorithm, and suggests the player adjust the mod wheel when no notes are sounding.

True to the developer's claim of providing "playable" sounds, only one sound-effects instrument appears in each of the SoundCreator collections: Fearful (Series 2), the likes of which you might hear in the soundtrack to *Forbidden Planet*, and the aptly named Lasers (Series 1).

Continued on page 116 ►

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keyboard reports

Yamaha MU80

By Ernie Rideout



The MU80 provides a wide window into its soul. When you peer into it, you see pictures that indicate the type of sound selected for a part (in this case the noble trombone), effects send levels, part volume levels on playback, and other graphic editing conveniences. The analog input (TRS) is on the left of the front panel.

Some General MIDI modules are stripped down to the bare essentials: Plug them in and turn on the power switch. Others give you banks of extra sounds and MIDI control of everything except your Cuisinart. Some modules sound so good that they've made it into professional recording studios and onto stages. Onstage, though, you'll rarely see one without an accompanying sequencer to control it, not necessarily the most intuitive or spontaneous way to play live.

With the MU80, Yamaha seeks not only to put a General MIDI (GM) module in the hands of gigging keyboard players, but also to "standardize" synth features that are beyond the capabilities of GM. In addition to a built-in MIDI/computer interface and a generous 64 voices of polyphony, it sports a stereo audio input for a guitar, microphone, keyboard, or combination of these. The external signals are routed through their own parts with full access to the on-board effects and mixing. Besides the sequence-playback modes, there are preset and user banks of four-zone performances, which can be controlled from a single-channel keyboard. The MU80 heralds the arrival of a new superset of the GM specification, Yamaha's XG format, which presumably will standardize high-performance features such as polyphony, effects, and MIDI implementation among future instruments bearing the XG logo. The XG format will definitely be of interest to sequence gurus, game developers, and folks who just love to probe the depths of registered parameters, system-exclusive, and other MIDI controller delights.

Conceptually, there is a lot going on behind that big green LCD. Of course, there's the quantitative aspect as well: There are a lot more

sounds than the basic 128 GM fare, and the effects provide numerous possibilities that ordinary GM modules cannot. You know, kind of like those breakfast cereals that exceed all the RDAs, and taste good too. Compared with a generic GM module, the MU80 has a few surprises inside to boot. Ignoring the instructions on how to reveal the inner wrapper to preserve freshness, let's rip the top clean off and take a peek. Pass the milk, please.

Fortified With 357 Sounds. In addition to the 128 GM sounds, 357 variation sounds (not including sound effects) are to be found scattered throughout the 126 variation banks. If variations exist for a particular sound, you can get at them by scrolling through the banks until a new program pops up on the LCD, or by sending a bank select message (MIDI controller 0, then controller 32) from your sequencer or MIDI keyboard controller.

Sounds are not merely strewn about the variation banks at random, however. By glancing at the useful supplemental Voice List document, you'll see that not all sounds have variations, and among those that do, the variations are not necessarily found in the same banks. Each variation bank holds a specific kind of variation on the original sound, such as stereo, slower decay, brighter, darker, with resonant filter, detuned, doubled at the octave, in an ensemble, or with velocity cross-fading. Some sounds that require two oscillators have a single-oscillator variation, so you can use that sound but still get 64-voice polyphony.

Banks 64 and above contain different samples than the original sounds. Thankfully, Yamaha has packed quite a few of these in, especially for those sounds that might interest

YAMAHA MU80

DESCRIPTION

Multitimbral General MIDI sample playback sound module and computer MIDI interface with analog audio input and built-in effects.

MEMORY

8Mb waveform ROM. 128 General MIDI ROM programs, 357 ROM variation programs, 52 ROM variation sound effects, 9 XG mode drum kits, 10 TG300B drum kits, 1 C/M drum kit, 2 sound effects kits. 64 ROM performances. 128 RAM performances.

VOICE ARCHITECTURE

Multi mode: 16 MIDI parts (32 with dual port or two-host interface access), each with settings for volume, expression, pan, reverb send, chorus send, variation effect send, key shift, filter cutoff frequency, resonance, 3-stage amplitude envelope times, 2-stage pitch envelope time and level, vibrato rate, depth, and delay, detune, mono/poly mode, velocity sensitivity, note limits, portamento, velocity limit, pitch-bend, and modulation depth.

Performance mode: 4 parts on a single MIDI channel.

FEATURES

64 voices of polyphony. Up to three simultaneous effects from 12 reverb algorithms, 10 chorus algorithms, 44 "variation" algorithms, and 3 distortion algorithms. Analog inputs with expression, pan, and effects settings. Built-in MIDI interface with serial connection to Macintosh, IBM-PC, and NEC computers.

INTERFACING

1/4" L/R stereo main outs, 1/4" TRS stereo analog in, 1/8" stereo headphone out. MIDI in A and B, out, thru. Serial port. External power supply.

DIMENSIONS

8-5/8" x 8-1/4" x 1-3/4". 2 lbs, 14 oz.

SUGGESTED RETAIL PRICE

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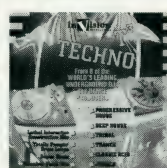


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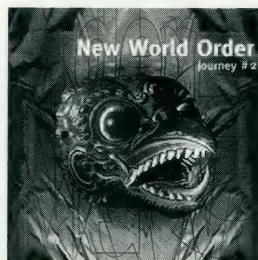


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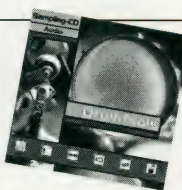
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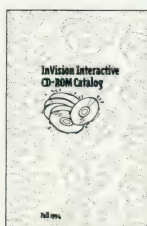


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a gigging keyboardist. In these banks you'll find several organs, basses, brass stabs, and string pads, plus a whole bunch of synth leads, pads, and other great synth sounds.

Taking the variations and the basic sounds together, the MU80 provides a lot of depth and variety. Even if you never bothered to edit the sounds, use the effects, or delve into the envelopes or LFOs, you could crank out a great many sequences and never repeat yourself.

Compared with other high-end GM modules, the sounds of the MU80 hold up very well overall, and in some cases excel. They are not without some limitations and clunkers, but these do not impair the module's utility. Whether you will notice any blemishes depends on how you use the sounds, since very few of them are particularly blatant, unless you solo the sound and let it decay. It's more significant that there is this much instrumental variety, and so many great sounds, within an \$895 module.

Take the Hammond organ emulations, for example. For most sequence work, the Leslie effect is adequate, and the variety of drawbar settings, percussion, and overdriven sounds is certainly enough for most casual and club gigs as well. The electric pianos are commendable, particularly the DX variations, and you're not likely to get bored with as many as seven variations on a single EP sound. The synth sounds are a real treat, with some really nice filter sweeps, basses, and leads, and there are tons

YAMAHA MU80

PROS

User storage of performance configurations. Excellent effects. Effects, levels, panning of incoming analog signals controllable through MIDI. Excellent MIDI control of voice parameters.

CONS

Limited access to 32-part operation. Windows driver not supplied. Poor documentation regarding use as computer/MIDI interface.

BOTTOM LINE

Great for expressive sequencing, and convenient for casuals, too.

of them. The MU80's filters are pretty darn impressive for an instrument of this price.

Between the overdriven fifths and the velocity-switching electric guitar that brings in harmonics, you could piece together some ripping guitar solos. The basses are certainly adequate, although the fretless bass patch sounds more like an acoustic with the low end boosted.

All of the string sounds are lush, and a cut above what you'd expect. The same goes for

the saxes and brass, which each have several variations to choose from that are great for a variety of solo styles. The woodwinds are less convincing, and we wish that some ensemble woodwind patches had been included. The drums and percussion are all punchy and bright, with the concert snare standing out in particular. For kicks, so to speak, the MU80 has reverse kicks, snares, toms, and cymbals. A nice touch, for sure.

If you have greater ambitions for a sequence than the stock sounds can help you achieve, then with a little familiarity with the MU80's MIDI parameters, you can come up with some absolutely wild versions of the existing patches. For example, tweaking the brightness of a sustained synth sound creates an excellent filter sweep. Making drastic adjustments to the pitch envelope can turn flute into a siren. This is capability you'd expect to find on a full-blown synth, not on a GM module.

The MU80's limitations occur primarily in the upper register of a few sounds. For example, the otherwise excellent grand piano sound has obvious multisample mismatching above F5 that introduces a mechanism thump, and the decay loop is very thin-sounding above F6. Similarly, EPiano1, a basically fine Rhodes patch, exhibits some harsh artifacts above F6, which is dog-howl range anyway. Some other electric piano, DX, vox, and string samples have loop problems that crop up only in the highest reg-

XG, GS, GM, GOLLY GEE!



XG? GS? What are these acronyms, anyway? Why does General MIDI need another "format"?

The General MIDI specification (GM) was developed so that any manufacturer could design sound modules that would respond in a predictable way in a sequence-playback system. GM guarantees such basic capabilities as response to 16 MIDI channels, 24 voices of polyphony, 128 patch programs in a fixed map, 47 basic percussion sounds, and other conventions. The idea was that this would increase the likelihood of a MIDI sequence being recognizable no matter what GM module it's played on.

While there are certainly benefits to General MIDI, it does not guarantee that a module can respond to some of the

more musical aspects of MIDI control. The ability to respond to channel aftertouch, to name but one example, is a requirement, but the effect produced by an aftertouch message is not outlined. One instrument might add vibrato to a sound when it receives aftertouch, while another might produce an increase in reverb time.

To combine widespread compatibility with expressive MIDI control, Roland introduced the GS format on the SC-55 Sound Canvas in 1991. While providing all of the GM requirements, GS added sounds to the basic 128, and increased the sound and effects attributes that could be controlled via MIDI. A number of software developers responded by designing sequencing and librarian software that facilitated the editing and

use of this expanded control. Some computer game developers began releasing titles with music that took advantage of GS instruments and sound cards. No other hardware manufacturer has chosen to follow the GS path, however.

With the MU80 and the XG standard, Yamaha is embarking on a similar path. If the MU80 is indeed the indicator, XG-rated instruments have the same capabilities as GS instruments, plus some expansions and additions, notably a minimum of 32 voices of polyphony, a minimum of three effects processors, a large number of effects algorithms, and MIDI control of analog signal inputs. Other handy abilities, such as amplitude and pitch envelope control, tuning of individual pitches and drum sounds, real-time effects control,

and MIDI-controlled LCD patterns, are similar between the two formats.

XG and GS instruments will play back the same GM-format Standard MIDI File with very few noticeable discrepancies, other than slight differences in timbre. It is not possible, however, to play a sequence that takes advantage of the features of one format on an instrument of the other format. Even if the MIDI parameter addresses were the same between the two formats, such settings as filter cutoff frequency would not be likely to respond the same way. The fact is, the parameter addresses are not the same, and much of the strength of either format comes from control via system-exclusive messages, which of course are different for each manufacturer. ■

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isters, say F7 and above.

The "Steel String" guitar patch has a different problem, being quite sharp from G#2 on down. This does make for rather realistic open chords; too realistic, in fact. A couple of the electric guitars, Clean Guitar 2 to name one, have an audible timbral change after the initial attack that sounds like a filter closing down suddenly.

There are only a few sounds that we can really fault the MU80 for. One vox/piano variation called Dream has a vox loop that makes a rather unwelcome percussion sound from C5 on up. A couple of synth pads, such as CC Pad, have really loud loop clicks that make for a seemingly unintended percussive effect when played as single notes in all registers. Played as a chord, these pads are unusable in any range. Several of the ethnic sounds, such as Shakuhachi, Bagpipe, Gamelan, and Tabla, while of good quality, do not resemble any instrument of those names that we've heard before.

Effects Facts. The MU80's effects are outstanding, both in quality and in implementation. Reverb and chorus algorithms are applied globally, with each part having its own send levels. Each chorus algorithm in turn has an overall send to the reverb algorithm. Reverb time can be as long as 30 seconds. EQ can be applied to all parts globally, with five distinct, editable configurations of five bands each to choose from.

So far, so good, but what if your requirements are more sophisticated? What if you simply must have two different reverbs simultaneously, on different parts? No problem. The MU80 has two categories of "insert" effects. One of these lets you apply distortion, overdrive, or a 3-band EQ to individual parts in addition to the global effects. These can only be applied to one part at a time.

The other category, the "variation" effects, is almost an entire effects device unto itself, with 39 algorithms to choose from. The effect you choose from this group can be inserted on one part at a time, or it can be applied globally. Besides a full selection of reverb (including gate and reverse gate), delay (including cross and stereo), chorus, flanger, distortion, and phaser effects, you can find an aural exciter, compressor, pitch-shifter, and rotary speaker algorithm among the "variation" effects. The range of editable parameters for all of these is impressive, with delay times up to 750ms, adjustable ratio up to 20:1 on the compressor, and tunable pitch-shifting with feedback gain, just to mention a couple.

Stays Editable, Even in MIDI! Following the procedure implemented by some other GM modules, the MU80 doesn't let you edit the sounds themselves. Rather, you make edits to the "part" a given sound is assigned to. In the MU80, however, these editable parameters are numerous and afford a lot of synth and effects power; they include amplitude attack and release times, pitch envelope levels and times, tuning, portamento, effects insert settings, and note and velocity limits, among other things.

In multi mode, the mode that gives you 16 or 32 parts (depending on your system), these part settings are retained after you turn off the power. They also apply to any new sound you assign to that part, whether the settings are appropriate or not. In multi mode, therefore, the way to work is to save or insert the part settings and the program change numbers of the associated sounds via MIDI in a sequence — a simple dump procedure, or a fair number of continuous controller messages to input.

Within multi mode, there are three sub-modes to choose from, depending on what instrument most of your sequence data has been created for. If you've got a clean slate, you'll use XG mode, which takes advantage of Yamaha's superset of GM (see sidebar, "XG, GS, GM, Golly Gee!" on page 86). If you have recorded a lot of data for Yamaha's TG300 module, select that mode, although the manual states that the data may not play back as well as on a TG300. If you have Roland MT-32-compatible sequences, select C/M mode.

The MU80 departs from the GM pack with its performance mode, which, although limited to four parts all on a single MIDI channel, allows you to save all edits and sound assignments to a user bank. This alone turns the instrument into a programmable four-zone synth, even if your keyboard transmits only on one channel. It's a pretty quick way to set up layers, splits, and velocity splits. It also adds two assignable controllers, to which you can route filter, envelope, or effects controls. Program changes sent to the MU80 while in this mode do not change the sounds assigned to the parts, but select a different performance. Drum kits are not accessible in this mode, but individual drum sounds are, as separate programs.

As with multi mode, there is no blank performance template; to create your own, you must begin with one of the 64 factory performances and either go with the part settings or alter them. This can be a real pain if the performance you begin with has some less-than-obvious parameter settings that yield surprising results, such as a reverse amplitude setting that shuts down your sound just when you wanted it to get louder.

The editing environment of the MU80 is very friendly. The enormous LCD provides a lot of information at a glance, including a nifty icon for every type of sound or performance. The icon even shows what setting the host (computer) switch is set to when you move the switch, eliminating the need to peek at the back of the instrument — a major neck-strain saver! Each part is shown as a bar graph that indicates the settings of any selected parameter. The bars function as level meters in play mode. Volume, expression, pan, and effects sends are also displayed.

You can edit parts individually, or many parameters can also be set for all parts at once, with the bar graph serving to show the settings for all parts simultaneously. This bar graph approach also comes in handy when editing the overall instrument EQ.

For you power sequencers, all parameters

can be controlled via continuous controller and/or system-exclusive messages, a mind-bending range of possibilities. With such programming, you can change everything about the MU80 in real-time during sequence playback, from sounds, tuning systems, and effects to filters and envelope settings, and even what the display looks like. Borrowing an extra-cool feature from its predecessor, the TG300 (see Keyboard Report, July 1994), the MU80 will display the sys-ex string for any selected parameter, including the checksum. The parameter value changes in real time as you make edits, so you can hear what the setting sounds like before you type it into your sequencer. This is a major time-saver for serious sequence programmers. For a glimpse of the power behind such programmability, see "Sound Canvas Hot Tips" (*Keyboard*, Feb. 1994).

Surprise Inside! Other high-end GM modules have provided inputs for mixing external analog audio signals, but the MU80's implementation is a step ahead. With the single stereo 1/4" input on the front panel, you can connect two audio sources and control their volume, panning, effects programs, and effects sends from within the MU80's MIDI-controllable system. Yes, you can even watch the signal levels on the bar graph!

The two input channels have a variety of preset effects that accommodate the signal levels of mics, guitars, or keyboards. Guitar-oriented effects include amp simulators, phaser, flanger, pitch-shifting, and a couple of reverb types. The options for vocal include several "karaoke" algorithms that are mostly slapback with different reflection times, and a pitch-shifter that'll take your voice up or down two octaves. For a keyboard instrument, in addition to the chorus, phasing, and reverb algorithms, you can select a rotary speaker simulator or a velocity-sensitive filter wah, among others.

On a more practical level, you could run the combined audio output of your analog signals and MIDI sequences directly to a cassette recorder, and have an instant low-budget recording setup. This could be a boon to home studio owners with small mixers, and educators with nothing more than a cassette recorder at their disposal who need to record quick demos or document student progress.

Send Away Today For Complete MIDI Interfacing. In addition to its synthesizer and effects features, the MU80 has a built-in computer interface and two MIDI in ports. Both the computer input and the dual MIDI inputs can access the 32-part multitimbral features. Trouble is, your setup may or may not have the capability to access all 32 channels. You can use all 32 channels if you hook up the MU80 strictly as a tone module and use both of its MIDI in jacks, as each jack provides access to 16 channels. This would work in a computer music system that uses something other than the MU80 as the MIDI interface. We're betting, though, that many folks who are in the market for an under-\$1,000 GM module would rather save money by using the MU80 itself as their interface.

Continued ►

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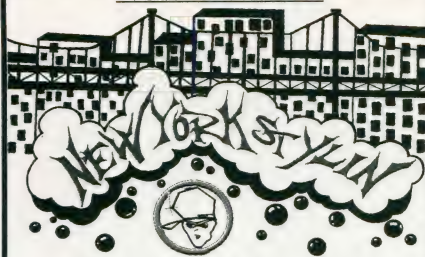
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yamaha mu80

To use the MU80's built-in computer/MIDI capability with an IBM-PC running Windows, you need to obtain the Yamaha CBXT3 driver diskette from your dealer, or directly from Yamaha (available at a nominal shipping charge, we're told). Second, you'll need to purchase a special cable to hook up the MU80 to one of your PC's com ports, since the cable does not come with the instrument. Our local Yamaha dealership did not have the drivers or cables in stock. In fact, Yamaha had not informed them that these were necessary, or that it was their responsibility to provide them. Talk about delayed gratification. Even when you get the cable and the driver, you won't be able to run the MU80 in 32-channel mode under Windows (although Yamaha tells us that an upgrade for the driver is in the works).

Once you have the cable and driver, connect the MIDI out of your controller keyboard to MIDI in B (not MIDI in A!) on the MU80, as shown in a diagram (but not explained) in the manual. It took us several days to figure out why the MIDI out port worked fine, but the MIDI input didn't. That's what we get for not scanning the schematics.

If you want to use the MU80 as a MIDI interface with a Macintosh, you'll only be able to address its 32 MIDI channels if your software itself is capable of 32-channel operation. Otherwise you'll be limited to 16 channels. We were able to achieve 32-channel ecstasy with Mark of the Unicorn's Performer and FreeMIDI, but not with Opcode's Vision and OMS. OMS refused to be tricked into seeing two separate MU80s and addressing them on 32 channels. If 32-channel operation is a necessity for you, we suggest testing the MU80 with your brand of Mac sequencer in a music store before you buy.

Sugar Bomb or Health Nut Granola? The MU80 has many things going for it. It's inexpensive, has a solid basic palette of sounds, and is easy to operate. Its effects are way above average, and with the analog ins, it can do double-duty as an effects device. The extensive parameter control gives it the potential to realize very expressive sequences. The performance mode is a nice added dimension for live playing.

The computer interface limitations, though, will make it impossible for some users to access its full 32-part abilities. If your system can help you get around this, great. If not, you're stuck with a 16-part tone module, but at least a good one.

The main competition for the MU80 is probably Roland's SC-88 Sound Canvas, which retails for \$300 more. The sound of the two modules is comparable overall, and the multitimbral and polyphony specs are the same. The SC-88 has RCA stereo analog ins, but the signal is not controllable internally, nor can you apply effects to it. The SC-88 also lacks the performance mode user banks of the MU80.

So the price is right, and the box is packed. It could easily provide a healthy balance of sequencing, gigging, and fun for you, even if it doesn't quite meet the U.S. Recommended Daily Allowance of interface connectivity. ■



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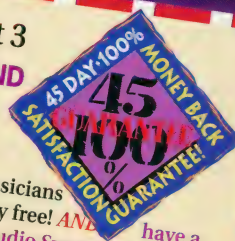
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IT'S UNLEASHED MORE CREATIVITY THAN

The Mackie CR-1604 16x2 mic/line mixer is getting dangerously close to becoming a pro audio classic.

Not because it has the most mic inputs, knobs, buses or switches — others have long since topped us for sheer numbers of doo-dads and thingamabobs.

No, the CR-1604 has ended up in so many studios and on so many stages because it sounds good. And because it's downright easy to use.

More than any other component, your mixer is the focal point of all your creative efforts. If it's complicated to operate, you've just erected a frustrating barrier between you and your music. If it's noisy, everything that's recorded will be noisy, too.

When you're looking for an affordable, compact mixer that's good enough to regularly record complete albums and primetime TV soundtracks, call us toll-free (M-F 8:00 AM to 5 PM PT).

You'll talk to a real person who'll send you our 40-page color tabloid complete with a 16-page hook-up and applications guide.

Then start exercising your musical creativity with the mixer that's becoming a classic for all the right reasons.

EXTREMELY RUDE, BLINKING SOLO LIGHT.

Sounds like a minor detail until some night at 2AM when you can't figure out why there's no sound coming out of your monitors.

BEEFY HEADPHONE AMP WITH SEPARATE VOLUME FADER.

Instead of the usual wimpy amp, the CR-1604 has a separate, high-gain headphone amplifier section with enough gain to drive any brand of headphone to shock volume levels that will satisfy even a drummer. Also has more than enough gain to drive any monitor amplifier.

INSIDE: QUALITY COMPONENTS

like double-sided, through-hole plated fiberglass circuit boards with solid brass stand-offs, gold-plated interconnects and sealed rotary potentiometers that resist dust & liquid contamination.

BEST RFI PROTECTION OF ANY COMPACT MIXER.

No matter how quiet a mixer's internal circuitry is, it can be sabotaged by external radio frequency interference. RFI is created by broadcast stations, cell phones, computers and even that expensive radio-controlled car your kid got for Christmas. RFI gets into a mixer via the input jacks where it uses the internal circuit traces as miniature antennas to produce noise ranging from a low-level hiss to actual, audible voices and music.

The CR-1604's 1/4" jacks use a shunting capacitor to stop RFI before the main circuit traces. Instead, RFI is re-routed back through the metal jack body and washer, then dissipated via the mixer's outer chassis.

XLR inputs are likewise protected from RFI via ferrite beads.

Next time you see a mixer with plastic 1/4" jacks, remember what you just learned.

DUAL PURPOSE METERING SYSTEM.

Besides showing main L/R output level, the LED ladders are used to establish input levels. Set a channel fader at Unity, press the channel's SOLO button and set input trim level. This approach achieves very high headroom and low noise at the same time. Plus you have 20dB MORE GAIN above Unity.

INSTANT HANDS-ON-ACCESS

to constant power pan controls, musical 3-band equalization, ALT 3/4 extra stereo bus, stereo in-place solo, seven high gain Aux sends per channel (via four controls) and four high gain stereo Aux returns (20dB more gain above Unity).

MULTI-WAY CONVERTIBLE PHYSICAL DESIGN.

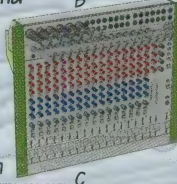
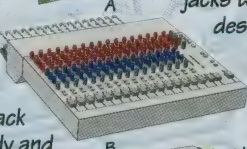
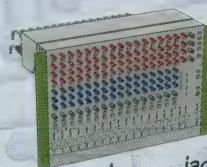
The CR-1604's rotatable input pod lets you conserve space in a road rack or spread out in a project studio.

Change from a 7-rack-space mixer with jacks to back (A) to a tabletop design with jacks to top (B) in minutes. Add our optional RotoPod bracket (C) and rotate inputs and outputs to the same plane as the mixer's controls (a favorite for small SR set-ups).

Any of these conversions takes just minutes with a Phillips-head screwdriver. And our XLR10 10-mic preamp expander can be added in any of the configurations.

NOT VISIBLE BUT VERY IMPORTANT: THE MACKIE MIX

HEADROOM DIFFERENCE. Nobody uses just one channel of a mixer (although most headroom specs are stated that way). In any mixer, the mix amp stage combines signals from ALL inputs at once. If it overloads, you can't back off the master fader because it comes AFTER the the mix amp. So audible distortion results when the mix amp gets bogged down with multiple hot inputs. Mackie's unique mix amp architecture provides as much as twice the mix headroom of conventional designs. No wonder it's a favorite of top electronic percussionists.



ANY OTHER COMPACT MIXER.

ULTRA-LOW NOISE. When you compare noise specs, look for the one that counts: all 16 channels up at Unity Gain — not one channel at Unity gain. No other compact mixer beats the CR-1604 when it comes to low noise floor.

MULTI-FUNCTION AUX SEND SYSTEM WITH LOADS OF GAIN. AUX 1 on each channel can be used either for effects (post-fader/pre-EQ) or switched to monitor sends for stage monitor or headphone cue signal (pre-fader/pre-EQ). AUXs 2 thru 6 are post-fader/post EQ. AUX 3 and 4 knobs can be shifted to AUX 5 and 6 at the touch of a button.

MUSICAL 3-BAND EQUALIZATION. The CR-1604 redefined equalization points for compact mixers: 12kHz Hi EQ (instead of 10kHz) for more sizzle and less aural fatigue, 2.5kHz Mid (vs. 1kHz) for better control of vocals and instrumental harmonics, and 80Hz Lo EQ (instead of 100Hz.) for more depth and less "bunk." Others have copied these EQ points, but none have successfully emulated our quality equalization circuitry.

It costs us more, but the result is zero

phase distortion and a sweeter, more musical sound. It's another reason that the CR-1604 is a favorite of TV and film soundtrack scorers.

LEGENDARY MICROPHONE

PREAMPS. Instead of sixteen "acceptable" integrated circuit microphone preamps, the CR-1604 features six big-console-quality preamps...the same mic preamp design that's on our acclaimed 8•Bus consoles. You get tremendous headroom and bandwidth with less noise and distortion. If your particular application requires more mic inputs, simply add our XLR10 10-Mic-Preamp Expander. Both it and the CR-1604's internal mic preamps have real and verifiable specs of -129.5 dBm E.I.N., 300,000Hz bandwidth and 0.005% THD. No wonder several of the world's top microphone manufacturers use Mackie Designs CR-1604s to demo their finest condenser mics at trade shows.

INPUTS AND OUTPUTS AT PROFESSIONAL — NOT HOBBYIST — SIGNAL LEVELS.

The CR-1604 operates internally at industry-standard +4dBu levels to help reduce noise. But it can also handle the weaker -10dBV levels found on some digital multitrack machines and other equipment.

THE PERFECT MATCH FOR ADATs, DA-88s AND HARD DISK RECORDING SYSTEMS. We'd dearly love for you to buy one of our 8•Bus in-line consoles, but the CR-1604 makes a very effective 8-track recording mixer. The CR-1604's first eight channels have post-fader channel inserts (channel access). This VERY important feature is found on few other compact mixers. It lets you create a "split console" so that you can simultaneously track on eight channels and monitor/mixdown on eight more.

EXPANDABILITY. If you add a second or third digital multitrack, you can use one or two additional CR-1604s with our MixerMixer active combiner. It lets you run 32 or 48 channels without having to "cascade" the mixers.

Split monitor configurable for easy 8-track digital tracking & mixdown

Used on more superstar world tours in the last three years than all other compact mixer brands combined¹

Legendary studio-quality discrete microphone preamps

Used by members of the Tonight Show band, David Letterman band, Conan O'Brien band, Saturday Night Live Band²

Expandable with XLR10 Mic Preamp Expander & Mixer active combiner

Used by Fox Television Sports for Monday Night Football on-field sound²

Built-like-a-tank physical construction (it's too darned homely to be fragile)

Used for sound design and incidental musical scoring on the world's most popular TV show

Special mix amp architecture for twice the mixdown headroom of other designs

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E-MU ESI-32

16-BIT STEREO SAMPLER

By Greg Rule



E-mu's ESI-32 stereo sampler — low fat, high performance. Priced from \$1,495 to just under \$5,000 (depending on configuration), it's an instrument that both budgetarians and powerheads can appreciate.

Weighing in at ten pounds, and with a motherboard almost small enough to swallow, E-mu's ESI-32 could be considered the Richard Simmons of samplers. What a difference a decade makes . . . seems like yesterday when E-mu cranked out products that looked more like refrigerators than musical instruments.

Don't underestimate the ESI-32. Its body is slim, but there's plenty of room for extra beef. You can add a SCSI port, a digital S/PDIF interface, an internal 270Mb SyQuest drive, and up to 32 megs of RAM. Pop the hood and you might be amazed at how miniaturized and neatly organized its internal components are. We were.

Clearly, the ESI-32 was designed to accommodate a variety of customers. First-timers will appreciate its ease and affordability, high-end users will enjoy its power and expandability, and deejay-types can get their kicks firing samples from its ten front-panel trigger buttons. The base unit retails for \$1,495 while a fully-loaded ESI with a pair of 16Mb SIMMs hovers near the \$5,000 price range. (Refer to the info box for additional prices and specs.) We reviewed the mother machine, complete with 32Mb of RAM, a SCSI interface, a 270Mb internal SyQuest drive, digital I/O, and version 1.04 software (version 2.0 wasn't available at

presstime). Smokin'.

The ESI-32's chief competitors are the Akai S2800 (starting at \$1,429), the Ensoniq ASR-10 (\$2,695), and Roland's S760 (\$2,595). For a detailed comparison of the three, refer to our Aug. '94 cover story on samplers. For now, we'll refresh your memory with this quick checklist: All four units offer 16-bit stereo sampling. RAM on the Akai and Ensoniq can be boosted to 16Mb; the E-mu and Roland double that at 32Mb. The Roland offers 24 voices, Ensoniq 31, Akai 32, and E-mu 32. The ESI seems to have the edge in the number of non-real-time DSP tool types, offering a total of 14 (not counting such things as truncation and cut/copy/paste), but each machine has its own unique attributes. The Ensoniq, for example, contains a full-featured real-time effects processor. The Akai has two LFOs per voice and on-board graphic waveform editing. The Roland has an optional video output that facilitates big-screen graphic editing without a computer. But only the ESI allows the addition of an internal SyQuest drive. All issues considered, the ESI stacks up impressively.

Getting Around. The first thing to love about this sampler is its clean front-panel layout: bright white letters against a black background, a backlit LCD, and comfortably

spaced buttons and knobs. Its operating system is a thing of beauty — no confusing abbreviations or hieroglyphics. You'll find quick-access menus, dedicated Escape and Audition buttons (the latter is programmable), and an Enter button that blinks whenever it needs to be pushed. Without so much as a peek at the manual, we had no trouble sampling and editing during the "idiot test" portion of our review. Creating presets and zones took a bit more homework, as we'll outline below.

On the upper left side of the front panel are six main menu buttons: Master/Global, Preset Management, Preset Definition, Sample Management, Digital Processing, and Dynamic Processing. Those familiar with past E-mu samplers should feel right at home. Within each menu are various submenus, all easily accessed by scrolling forward or backward with the arrow buttons or directly from the alpha/numeric keypad. Once inside a submenu, you can make changes on each page via the up and down arrows, data wheel, and numeric keypad.

Other front-panel attributes include a row of dedicated function buttons below the LCD, and the aforementioned numeric keypad. The keypad can be used to not only speed-dial submenus and enter values, but also to trigger samples. Each button can be assigned

E-MU ESI-32

DESCRIPTION

Rack-mount sampler.

FEATURES

Mono and stereo 16-bit sampling. Thirty-two mono (16 stereo) voices. Sample rates: 22.05, 44.1kHz (48kHz via S/PDIF). Sixteen-part multitimbral. Thirty-two 24dB/octave low-pass filters with resonance. Three AHDSR envelope generators per voice. Multiwave LFO per voice. All parameters controllable via MIDI. Up to ten samples can be triggered from front-panel buttons. Compatible with E-mu Emax II, EIII, EIIIX, and Akai S1000/1100 libraries via SCSI. DSP functions include time compression/expansion, pitch change, parametric EQ, audio compression, taper, gain change, reverse, doppler/pan, stereo-to-mono conversion, left-to-right swap, DC filter, sample rate conversion, digital tuning, sample calculator, and transform multiplication.

MEMORY/STORAGE

2Mb RAM, expandable to 32Mb via standard third-party SIMMs. Internal 3.5" floppy disk (1.4Mb DS/HD). Internal 270Mb SyQuest drive option. SCSI I/O option.

CURRENT OPERATING SYSTEM

1.04. Scheduled for release: 2.0. New features will include sample scrub, MIDI bank select, SMDI compatibility, the ability to load presets and samples from floppy disk (as opposed to banks only), compatibility with additional CD-ROMs and hard drives, and access to internal CD-ROM drives in most Macs.

INTERFACING

Two 1/4" sampling inputs. Four polyphonic 1/4" audio outputs (can be used as two stereo pairs, four individual mono outs, or as one stereo pair and two effects sends/returns). Optional SCSI (50-pin) and S/PDIF interfaces. MIDI in, out, thru.

DIMENSIONS

17.12" x 3.5" x 9.75". 10 lbs.

SUGGESTED RETAIL PRICES

Base model \$1,495 (2Mb RAM, floppy); \$1,695 (2Mb RAM, floppy, SCSI); \$2,395 (8Mb RAM, floppy, SCSI); \$3,395 (8Mb RAM, 270Mb SyQuest, SCSI).

ADD-ONS

S/PDIF digital I/O \$200; SCSI I/O \$250; Version 2.0 software \$49.95 (includes 8Mb Synth Mania sound bank); CD-ROM bundle \$795 (includes Apple CD-300 CD-ROM drive and four E-mu CD-ROM discs). Additional RAM via third-party SIMMs.

CONTACT

E-mu Systems USA, Box 660015, Scotts Valley, CA 95067-0015. (408) 438-1921; fax (408) 438-8612. E-mu Systems Europe, Africa, Middle East, Suite 6, Adam Ferguson House, Eskmills Industrial Park, Musselburgh, East Lothian, Scotland, EH21 7PQ. 44-31-653-6556; fax 44-31-665-0473.

its own note number, velocity, and mode (latch, on, or off).

Patchwork. The ESI-32 organizes its sounds based on a four-tier hierarchical system of samples, zones, presets, and banks. Let's break it down. On the bottom level are the raw samples. Mono or stereo, they can be of any length, memory permitting. To give you an example, a fully-loaded ESI with 32Mb of RAM can sample up to six minutes and 34 seconds of mono material at 44.1kHz (3:17 in stereo). Those who want to use an ESI-32 to remix stereo songs might find the 3:17 limit, well, limiting. Too bad it can't be boosted up to, say, 64Mb for such situations. (It wasn't that long ago when 8Mb of RAM seemed enormous. Now we're whining about 32Mb — how times have changed.)

Each sample can be mapped to a specific range of keys, edited in a variety of ways, and then saved as part of a preset. Up to 256 such presets can live in RAM, memory permitting. Presets also contain information such as MIDI controller assignments and routings, cross-fade/switch settings, pitch-bend ranges, and so on. Call up a new preset, and you can call up an entirely new configuration.

Each ESI preset can house one or more zones. Don't let the name mislead you; zones do not refer to the raw samples' primary key ranges, but rather to the dynamic overlapping key ranges that relate to the ESI's voice parameters. Example: You have a piano preset that consists of five separate samples, one assigned to each octave across a five-octave range. You'd like to process the lower half of the keyboard with a filter and the upper half with an LFO. By creating two zones, one for each half of the keyboard, you can assign the processes to their respective zones. A zone can be as small as a single key, or as large as the entire key range. There is no limit to the number of zones, and multiple zones can overlap, each with its own set of parameters. A Quick Zone feature lets you define the zone you wish to work on simply by pressing the high and low notes on your MIDI keyboard.

The entire contents of the ESI's RAM — samples, zones, presets, and all — can ultimately be saved as a bank. For live performance situations, you might think of a bank as set's worth of material. Load bank one, for example, and all of your pre-arranged presets for the first set will be ready to go. Once a bank of presets has been saved to disk, you can load individual samples, zones, or presets from that bank to create a new bank as needed. In the software version we looked at (1.04), individual samples and presets couldn't be loaded from floppy, only banks. They could be loaded from the hard drive, however.

E-MU ESI-32

PROS

Easy to use. Powerful DSP tools. Expressive synthesis controls. Compatible with Emax II, EIII, EIIIX, and Akai S1000/1100 libraries via SCSI.

CONS

No real-time effects. No graphic waveform display. Certain DSP functions are painfully slow. Weak output level.

BOTTOM LINE

Affordable. Expandable. Powerful.

Back down to the zone level, it's important to understand that all ESI samples can be given one of two designations: Primary or secondary. You could, for example, create a preset that contains a softly plucked bass guitar as its primary sample, and a slapped version as the secondary. Primary and secondary samples can each have their own key ranges. Incoming velocity can be mapped to either sample type; velocity cross-switching and crossfading are offered (as is positional crossfading).

Sampling. Blowing samples into the ESI is about as easy as it gets. Select Sample Set-up from the Sample Management menu and choose your pre-sampling preferences: stereo or mono sampling, 22.05 or 44.1kHz sample rate, input signal strength, sample length, threshold level, note range, and whether or not you want the ESI to automatically normalize and truncate the sample immediately after it's been recorded. If you have the digital I/O option installed, you also can access additional input and sample-rate parameters. You can tell it to truncate only the beginning of a sample, only the end, neither, or both. If you feed the ESI a series of consecutive sounds during a sampling session, it will automatically place them across the key range for you from low to high. A number of preset maps are provided; those settings can be changed later.

With Sample Management mode selected, you can sample on the fly by pressing number 8 on the numeric keypad to start recording, and Escape to stop. Not as elegant as dedicated Start and Stop buttons, but we're not complaining.

As for sound quality, the ESI delivered just what we'd expect from a stereo 16-bit sampler — crisp, clean results. We noticed that the overall output level of the ESI-32 seemed weak, but we had no other major complaints in this department during our real world tests. For a more scientific look

at the ESI's audio specs, see our bench test results below.

Digital Editing. Interested in slicing and dicing your samples? We thought so. The ESI's Digital Processing menu is loaded with many a powerful tool to do just that. Options include loop, truncate, copy/cut/paste, and two submenus called Digital Tools. Here you

can perform such editing procedures as time compression/expansion, pitch change, parametric EQ, audio compression, taper, gain change, reverse, and doppler/pan. All of these processes can be performed on the entire sample or any portion thereof. Also available is stereo-to-mono conversion (or vice-versa), left-to-right swap, DC filter, sample-rate conversion, digital tuning, sample calculator (cal-

culates and displays in samples the single cycle loop length of a given frequency), sample integrity (reconstructs a damaged sample header), and transform multiplication (merges two sounds together, accentuating common frequencies and discarding frequencies that are not common to both). All of the Digital Tools are of the non-real-time persuasion, and there's no preview mode on-board. Luckily,

E-MU ESI-32 SAMPLER AUDIO SPECIFICATION TESTS

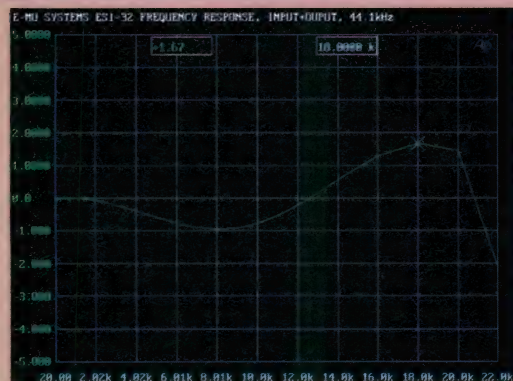


Fig. 1. Frequency response, input plus output, 44.1kHz sample rate.



Fig. 2. Quiescent noise.

Curious if E-mu had to make any significant sonic trade-offs in order to reach the ESI-32's price point? Our tests revealed a few places that could use improvement, but overall the unit is a solid performer.

Frequency Response. If there's one thing the ESI-32 doesn't suffer from, it's lack of high end. In fact, as the curve in Figure 1 shows, the unit boosts high end response starting at about 12kHz, with over 1.6dB of boost at 18kHz. This boost is measurable at both the analog and digital outputs. We got the same curve with test signals imported digitally and played through the analog outs. Strangely enough, when using the audio "monitor through" function during sampling, the output

signal is essentially flat, so the boost is apparently a function of the D/A conversion process.

Dynamic Range. The ESI-32 is nearly dead silent when sitting idle, and impressively quiet when playing back a silent sample; you should be able to play back the very end of a reverb tail without worrying about hiss and the like. We made our measurements with the headroom setting set at 10dB — E-mu's default, and the recommended setting for polyphonic applications. When we boosted the headroom setting to 0dB (appropriate for monophonic applications only), there was no appreciable increase in the noise floor.

Conversely, the ESI's output level is really anemic — a full-code 997Hz sine wave plays back

at only -16.78dBu. We were able to generate an output level of -8.8dB by setting the headroom to 0dB, but that approach to raising the output level is not going to work for you in normal polyphonic applications. The bottom line is that despite the unit's exceptionally low noise floor, the signal-to-noise ratio is only 81.64dB (A-weighted). That puts it above a Peavey SX II/SP and an Akai S01, on par with a Kurzweil K2000, and below the rest of the Akai line, the Roland S-760, and the Ensoniq ASR-10.

Distortion. Overall distortion on the ESI is low enough that you'll never be bothered by it (your mixer will likely have significantly higher distortion than the ESI), though the numbers aren't as low

as we're accustomed to seeing on today's generation of samplers. As with tests we've made on other E-mu products, the measurements at 10kHz are somewhat misleading — they reflect the gentle slope of the ESI's output filters (a conscious design decision on E-mu's part). The figures include "imaging" of the 10kHz test wave that occurs on either side of the sampling frequency (at 34.1kHz and 54.1kHz). These images never enter the audio path, so they're of no concern. When you factor them out, the figures are more in line with those for 97Hz and 997Hz.

Pitch-shift distortion was excellent, placing the ESI on an even keel with today's top performers. —Michael Marans

FREQUENCY RESPONSE:

Analog Input + Analog Output:
+1.67/-0.96dB, 20Hz-20kHz

DYNAMIC RANGE (DBU):

Note: All figures referenced to 0dBu, 10Hz-22kHz bandwidth.

Quiescent Noise Floor:

-98.42 A-weighted; -94.77 unweighted

Silent Sample, Input+Output Stages:

-94.39 A-weighted; -90.26 unweighted

Full-Code Output Level, 997Hz Sine Wave:

-16.78 A-weighted; -16.78 unweighted

Signal-to-Noise Ratio:

81.64 A-weighted; 77.99 unweighted

THD+N

(44.1kHz sample rate, 10Hz-22kHz bandwidth)

97Hz: 0.015% A-weighted; 0.021% unweighted

997Hz: 0.020% A-weighted; 0.047% unweighted

10.07kHz: 0.366% A-weighted; 2.625% unweighted

PITCH-SHIFT DISTORTION (%)

	A-weighted	Unweighted
+min 2	= .031	.059
+min 6	= .024	.075
+oct	= .024	.098
+aug 11	= .037	.160
-min 2	= .032	.056
-min 6	= .028	.047
-oct	= .033	.031
-aug 11	= .029	.034
Average:	0.029	0.070

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the ESI has an undo feature.

We had a blast mutating (and mutilating) our samples with the above. In one test we took an isolated drum track from an ADAT tape and sampled three one-bar snippets from it. After trimming the excess space from the beginning and ending of each, we used the ESI's audio compression tool to make them more punchy. During our testing, we discovered a few fun ways to turn standard-sounding grooves into pulsing, wheezing beasts.

Next, we time-compressed the samples to fit our tune's tempo. Speed-wise, all of these edits took a surprisingly short time to process, and the on-screen bar graph kept us informed of how quickly the ESI was number-crunching. There are ten different time-compression/expansion algorithms available, each optimized for a different scenario — drum material, deep bass, or broad-band samples, for example. In all but "tight" compression mode, however, the results were erratic. Sometimes we heard hiccups and flams, and other times the grooves were smooth as silk. Experimentation and patience were the keys. In the end, after an hour or so of trial and error, we came away with compressed versions that met our approval.

The final touch was to loop our loops — a snap on the ESI. You can use the left and right arrow buttons to automatically locate zero-crossings, and an auto-correlation feature nearly always assures that your loop start and end points will be a good match. Once you've determined the optimum loop points, you can use the crossfading and compression tools to achieve smooth, glitch-free loops.

Another DSP tool we had tons of fun with was doppler/pan. With 13 editable path types to choose from, each equipped with 26 user-definable points, we were able to generate some intense swirling stereo images. If you're using anything lower than version 2.0, however, you might hear some occasional unexpected hash using this effect. That grungy bug, according to E-mu, was exterminated prior to the release of version 2.0. (For more results of our editing adventures, see "Gremlins," below.)

The one thing we miss most in the editing department is a graphic waveform display, à la the Akai S2800. The ESI-32 provides no on-screen graphics for visual waveform editing — only numbers. With version 2.0 software, you can scrub samples with a pitch-bend wheel, or you can blow its samples into a computer via SMDI (a protocol for transferring samples via SCSI). Thanks to SMDI, you can quickly transfer material to a program such as Passport's *Alchemy* or Sonic Foundry's *Sound Forge* for the PC for some serious graphic editing. But even if you plan to use

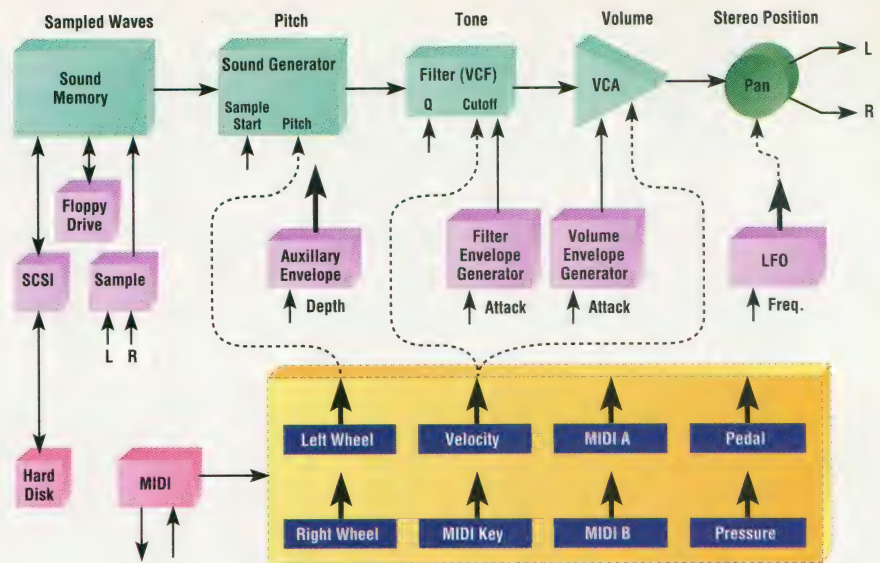


Fig. 1. Once a sound has been sampled and passed through the ESI's DSP tools, it follows the above path. The dotted lines indicate how real-time controllers, envelopes, and LFOs can modulate the sample.

Alchemy or *Sound Forge* for major edits, it would be nice if the ESI screen showed waveforms for quick, simple jobs.

Dynamic Processing. The ESI's Dynamic Processing menu is where you'll find such synth-like tools as a VCF, VCA, LFO, AHSDR, and an auxiliary envelope (see Figure 1, above). The ESI's lowpass filters (one per voice), along with their companion envelope generators, can be used to shape sounds dramatically — and dynamically. Routed to, say, velocity, the filter could be used to mellow a sample's biting highs as you play delicately, and allow those same frequencies to slice back into the mix when you pound. Controls are provided for cutoff frequency, resonance (Q), keyboard tracking, and envelope-related settings such as hold, decay, and sustain.

As for the LFO, its control options include rate, shape (triangle, sine, sawtooth, square), delay, modulation destination, and variation, which according to E-mu creates the illusion of having an ensemble of individual modulation rates. One *Keyboard* staffer wished E-mu had given the ESI more than a single LFO, citing his three-LFO synth programming days as some of his fondest. To the ESI's credit, its zone architecture allows you to assign different LFO effects to each key/zone/layer.

Gremlins. While the ESI impressed us in many areas, a few gremlins reared their heads during the review process. Perhaps the most offensive was the quirky way the data wheel worked in some of the editing modes. When truncating samples, for one, we found it frustrating to use the wheel to select our start and end points; the numbers sometimes jumped in uncontrollable increments as we

scrolled. In order to zero in on the correct locations, we found it easier to use the arrow buttons or numeric keypad.

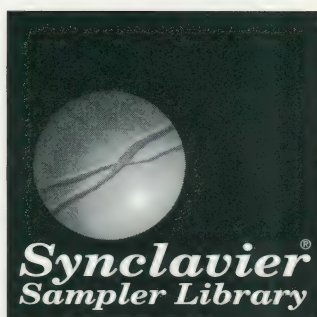
We discovered another bug while powering up with a SyQuest cartridge inserted. Doing so caused the ESI to ignore the SyQuest altogether; pushing the Drive Select and Load commands resulted in a flashing "Requires SCSI Drive!" message. Only when we powered down and rebooted without the cartridge inserted were we able to access that drive. According to E-mu, this is a result of the SyQuest's slow start-up time, and the problem has been compensated for in version 2.0.

Another pain, although not a bug, is the snail-like pace at which the ESI performs certain DSP duties. Especially when dealing with samples over, say, ten seconds long. Boosting the gain of a 13-second mono sample, for example, took a minute and 35 seconds. Applying a slight parametric EQ change to the same sample took 7:10. When we audio-compressed a 2:08 mono sample (big mistake), we almost fell asleep; the ESI took over 33 minutes to complete the task. What's more, when the results came back, we didn't like what we heard. Hopefully you have plenty of patience. If not, you might seriously consider using external audio modules for such things as compression and EQ. Too bad the ESI doesn't have a real-time effects processor, à la the Ensoniq ASR-10.

MIDI. No major complaints in the MIDI department. The ESI-32 is 16-part multitimbral, and it allows several dimensions of real-time MIDI control. With 32 dynamically allocated voices on-board, the ESI can be a major contributor to both live perfor-

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mances and MIDI sequences. All of our sequencing sessions during the review process were a rousing success. No glitches, no delays, no hang-ups.

For real-time expression, the ESI allows a variety of external controllers to drive its dynamic processors. A pitch-bend wheel, for example, can be assigned to control filter cut-off, aftertouch can control pitch, mod wheel can control the VCA attack rate, and so on. The ESI will respond to pitch-bend, channel aftertouch, and controllers 1-32 and 64-79, but not polyphonic aftertouch.

We raved about the ESI's user interface earlier, and feel a follow-up kudo is in order

here. When setting up a multitimbral performance, one touch of the of the front-panel Multimode button whisks you right to the heart of the MIDI matter. On-screen you can quickly see which preset (along with its corresponding volume and pan defaults) is assigned to which MIDI channel, and then quickly make any necessary changes.

Under the Global menu are six MIDI options that allow you to make blanket overrides to the preset-level settings. You can enter a MIDI channel override, a MIDI volume pedal override, and a MIDI volume/pan control that automatically overrides the preset level settings. Also in the global menu is a MIDI load

bank command for accessing banks from hard disk.

Grab Bag. Before wrapping up, we'd like to spotlight a few of the ESI's nifty knickknacks, many of which reside under the Special submenu. The calibration tool, for one, allows you to widen (or narrow) the volume knob's soft-to-loud curve. Don't like the LCD contrast? That can be adjusted too. Another feature allows you to adjust the ESI's headroom from 0-15db in 1db increments. You can monitor the volume of each channel by calling up the mixer-like View Channels screen. Finding out what version of software you're running doesn't require a strange series of button-pushes while booting. Instead, simply select Software Version from the Special menu. Also handy, the Output Format screen allows you to toggle between analog and digital formats. One final note: The ESI's manual is excellent. It's well-written and full of friendly diagrams and troubleshooting tips.

Conclusions. You can pick and poke at an instrument until it bleeds, expose its faults, and point out its weaknesses, but what really matters in the end is whether or not it inspires and assists you in the music-making process. The ESI-32 does just that. With little to no start-up time we were elbow-deep in its menus, slicing and dicing our samples, cranking out loops, and ultimately creating new material at a breakneck pace. The ESI's sound quality is excellent, its user interface is inviting, and its palette of DSP tools and synth-like controls is inspiring.

Things we wish it had? A real-time effects processor, for one. Off-line DSP processes, such as parametric EQ and audio compression, took a painfully long time to process — and you can't hear in advance what those changes will sound like. On-screen graphic waveform editing is another item we miss. Trying to locate exact start and end points numerically isn't always the most elegant method, though its zero-crossing locate feature is the next best thing.

In the under-\$2,000 category, nothing but the Akai S2800 touches this sampler. Comparing an *enhanced* ESI to the competition, on the other hand, is another story; there are formidable contenders from the likes of the Akai, Ensoniq, and Roland. While the ESI beats all three in the non-real-time DSP division, it finishes dead last in the real-time effects category. Only a fool would choose an instrument based on specs alone, though. We all have our likes and dislikes, especially when it comes to a machine's user-interface and sound quality. In our opinion, it excels on both counts. In a line: The ESI-32 has "winner" written all over its face. ■

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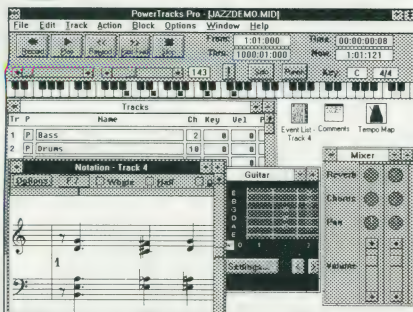
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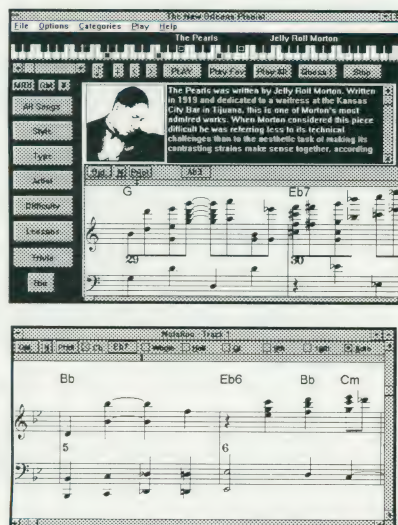
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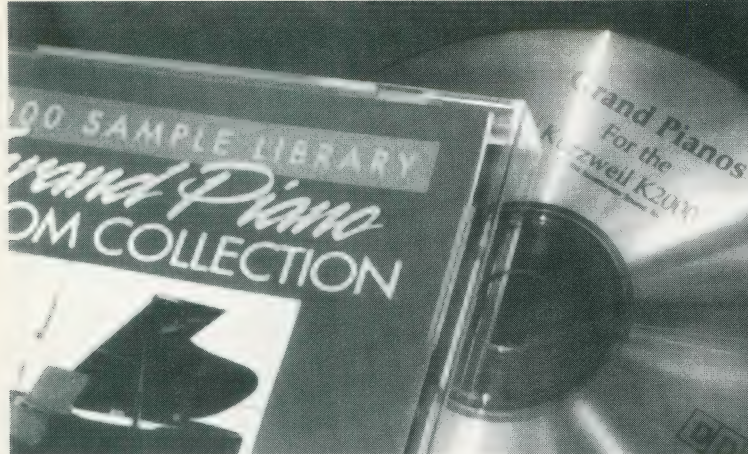
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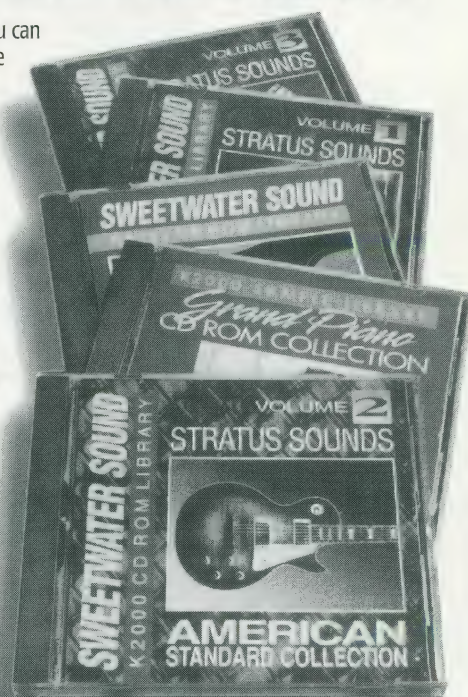
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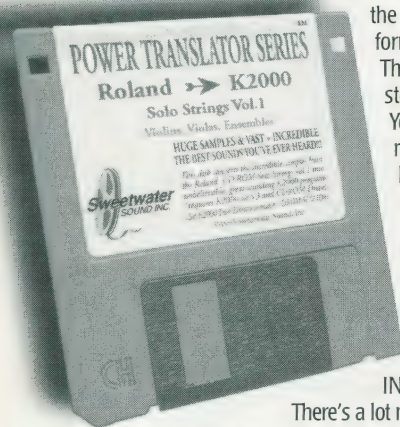
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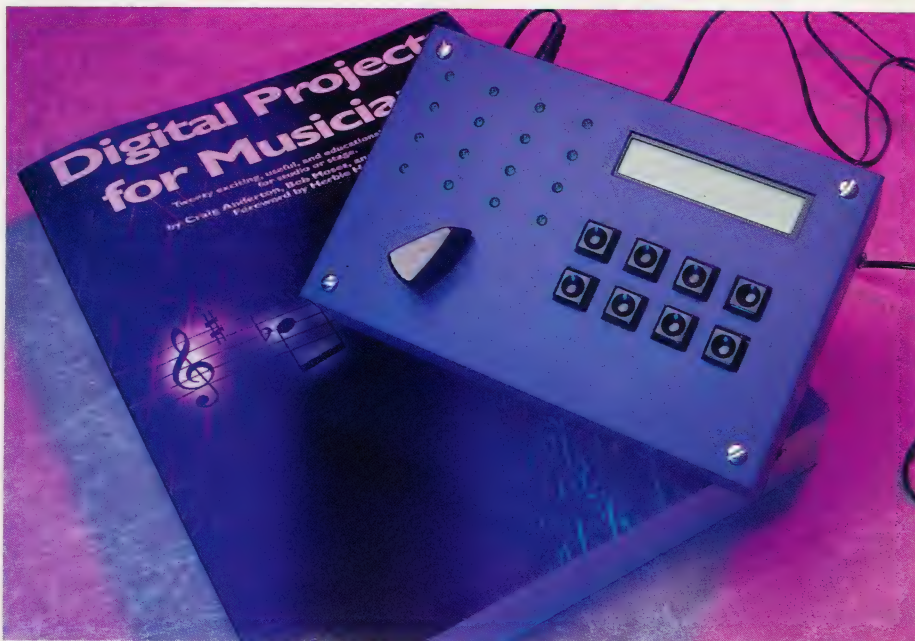
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Pavo MIDItols Computer & Digital Projects For Musicians

DO-IT-YOURSELF MIDI PROCESSOR KITS

By Mark Vail



No, this isn't a prop from the bridge of the original starship Enterprise, it's the hand-held version of the MIDItols Computer, the companion product to the book *Digital Projects for Musicians*, by Craig Anderton, Bob Moses, & Greg Bartlett (Amsco Publications, NY).

While it wasn't one of Jim Aikin's "Twenty Things You Must Know to Play Electronic Music" (see *Keyboard*, July '95), possessing a working knowledge of electronic circuits can be mighty beneficial — so you can diagnose and fix problems in your gear, customize products for unique capabilities, or at least understand more completely what's going on inside electronic music instruments and support devices. Where, though, do you start building on your knowledge?

I can't think of a better place than *Digital Projects for Musicians*. One of the three men responsible for this valuable 360-page tome is *Keyboard* columnist Craig Anderton. Craig's list of publications stretches all the way back to his first book, *Electronic Projects for Musicians*, published a full 20 years ago by Guitar Player Books. In that book, Craig illustrated how to make a dozen or so analog devices, such as a mixer, a ring modulator, and a fuzz box.

In the case of *Digital Projects*, Craig was approached by two other capacitor heads:

Bob Moses, who designs MIDI and digital audio products for Rane Corporation, and Greg Bartlett, who makes microprocessor-based utility devices and interfaces for numerous industries, and also runs Pavo. Bob came up with the ideas for many of the devices covered in *Digital Projects*, Greg concocted a few of his own, and Craig helped put all the material together for the book. (A fourth person, Steve Macatee, is responsible for cooking up circuit boards and designing prototypes for these projects.)

Digital Projects for Musicians is based on a build-it-yourself device called the MIDItols Computer. The two really go hand-in-hand; although there are parts of the book that don't deal directly with the MIDItols Computer, the majority of it does, and you won't learn nearly as much by just reading about putting the MIDItol together as you would if you really do assemble it.

Digital Projects for Musicians

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BOTTOM LINE

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you already know, this book can serve as an excellent introduction. The basic intent of *Digital Projects for Musicians* is to encourage you to customize — or at least be able to understand and possibly repair — electronic devices yourself. It covers basic electronic theory and concepts, digital electronics, basic and advanced MIDI techniques, assembly-



The tabletop MIDIttool's innards are accessible by removing four screws. This allows you to change its PROM for alternative applications. Two circuit boards are enclosed piggyback. Hidden behind the CPU board you see here is one containing all the front-panel components.

language computer programming, and building your own electronic devices — both from kits and from scratch. You'll find directions on identifying and using resistors, capacitors, potentiometers, semiconductors, integrated circuits, switches, plugs and jacks, and power transformers, as well as explanations on reading schematic and wiring diagrams. Further discussions cover IC sockets, heat sinks, circuit board etching, and enclosures for do-it-yourself electronic projects. The book even explains and illustrates common tools that are needed for kit assembly.

There are invaluable soldering tips and assembly instructions. Along with such advice as avoiding static blowout of an IC and staying away from acid-core solder are priceless tips like "don't solder with shorts on" so that rosin doesn't shoot out from a solder joint and burn your leg.

After presenting all these nuts and bolts, *Digital Projects* introduces the MIDIttools Computer — or MIDIttool, for short — and gives detailed descriptions of 20 possible applications you can make with it. Additional MIDIttool applications continue to be developed, and these are described in the Pavo catalog; they're also available via America Online, CompuServe, and the Internet. Pavo also offers a MIDIttools video (\$20) and a monthly newsletter (\$20 for six issues). They will even design and construct custom MIDIttools devices per your order.

Rather than list all the projects covered in *Digital Projects*, we'll mention just a few. For instance, there's the Custom Instrument, a master MIDI controller consisting of 64 switches of any kind — footswitches, doorbell switches, light sensors . . . you name it. The

Custom Instrument is the most complex project covered in the book. Maybe you'd rather have a handy little box that can send an all-notes-off message, a command to reset all continuous controllers, or a system-exclusive dump that you've programmed yourself. All of these duties can be handled by a less complicated application called the "Universal Transmitter," otherwise known as Project 1. Other possibilities include the Sequencer Remote Control, the Relay Driver, the Controller Thinner, the Channel Filter, the Controller Mapper, the Chord Player, the Translating Randomizer, and the 4 by 4 MIDI Patchbay. Each project includes details on the MIDIttool operations, how you might improve on the project or customize it for special needs, a summary of the assembly language routines incorporated in the application's software, and a MIDI implementation chart.

Following the 20 projects are detailed chapters on how the MIDIttool hardware and software do their things, complete specs on MIDI, and suggested reference sources for learning more. By the time you get through the book, you should know considerably more than you did previously — even if you don't construct your own MIDIttool. But that would be sad. Consider the possibilities. . . .

MIDIttools Computer

Reading the book is really only part of the learning process. To get the most out of *Digital Projects*, you have to make at least one MIDIttool for yourself. Once you've made one, you might find yourself going for a second — or at least investing in a few more PROMs (programmable read-only memory chips) for alternative applications.

You have two options when it comes to assembling the MIDIttools Computer: Do it yourself from scratch (finding parts and getting the best prices are discussed in the book), or order all the parts you need directly from Pavo. Should you go the latter route, you have a choice of making the computer as a tabletop/hand-held unit or as a single-space rack-mount device. Note that three of the MIDIttools projects (the Relay Driver, MIDI Patchbay, and the Custom Instrument) are too large to be accommodated by the hand-held unit, because of the additional circuit boards and other hardware required for those applications.

Constructing the MIDIttool takes, on average, five hours if you've ever done any soldering before. Since we couldn't afford the time to assemble the kit ourselves, Greg Bartlett of Pavo kindly provided us with the hand-held version of the MIDIttool. Actually, we'd call it a "table-top," or else "two-handed." Depending on the arrangement of buttons on your keyboard synth or controller, you might be able to set it in a "handy" place for easy accessibility. Greg also sent PROMs for four different MIDIttools applications: the MIDI Data Monitor, the Tap Tempo Transmitter, the Keyboard Mapper, and the Multi-Effector.

Changing the PROM from one application to another is simplified because the 40-pin I.C. socket has a pin-locking mechanism. It's also called a "zero-insertion-force" socket (or ZIF for short). Flip up the locking lever, the old PROM easily lifts out, the pins of the new PROM feed in, and the lever locks the chip into place. Those who have faced the often troublesome task of inserting an I.C. in a socket — especially one as big as a 40-pin — will appreciate the pin-locking socket. To gain entry to the hand-held MIDIttools' innards, you only have to remove four screws (which will conveniently work with either a flat-head or Phillips screwdriver) and flip the top part (which contains all the electronic circuits) out of the base. In spite of the relative ease with which you can change the I.C., we can't help but wish two or more applications could be installed simultaneously, with some kind of switch for activating the different PROMs individually.

The MIDIttool control panel sports 16 green LEDs, eight push buttons, a rotary data knob, and a two-line by 16-character backlit LCD. You can even adjust the LCD's viewing angle (contrast).

Some of the functions made available by the MIDIttools projects are duplicated by specialized boxes from Anatek, MIDI Solutions, and Eye & I Productions. (Likewise, many high-end computer-based sequencers can perform similar operations.) If you're only after a quick and simple fix for specific MIDI applications, such as a data filter, merger, or keyboard mapper, you might be better off choosing a dedicated, off-the-shelf product from one of those companies. But if you want to improve your knowledge and work with something you've



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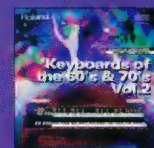
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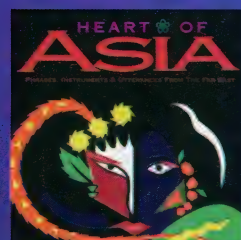
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MIDI Data Monitor. Have you ever encountered unpredictable results from your MIDI system and not had a clue how to track down the problem? We have — more often than we care to. MIDIttools Computer to the rescue. With the MIDI Data Monitor PROM installed, the MIDIttool lets you view MIDI events as they happen, via its LCD and multiple LEDs. One mode displays abbreviated descriptions of the type of event along with an associated value, if there is one. For events such as sequencer start, stop, and continue commands, tune request, system reset, and system-exclusive bundles, no values are displayed. In the case of a note-on (“NtOn”), the MIDIttools LCD indicates its note number, channel number, and velocity value. For a channel aftertouch event (“ChAft”), it shows the MIDI channel and a pressure value; if the data is polyphonic aftertouch, you see the channel, note number, and value. MIDIttools can display the most- and least-significant bytes of pitch-bends, although most synths these days only bother to send the MSB. In addition, particular LEDs blink when the unit receives specific MIDI events. Each of the MIDIttool's 16 LEDs is assigned to one particular type of MIDI message. Reception of MIDI clocks and active sensing will be indicated by LEDs, rather than monopolizing the LCD.

There's also a channel mode in which each LED indicates activity on one of the 16 MIDI channels. You can set the MIDIttool to receive on any one MIDI channel, all of them, or none. A “hold” mode will keep any LED that lights up lit, so that you can find out all of the types of MIDI messages the unit has received or what MIDI channels have been active.

In its stock configuration, the MIDIttools data monitor application doesn't provide a buffer for capturing incoming MIDI events. Therefore, you can't step backward through past events; you can only see them as they happen. Should you want to modify the Data Monitor application so that it will retain the MIDI events in a buffer, you'll have to invest in the optional MIDIttools developer's kit, which Pavo's Greg Bartlett tells us is expected to cost about \$400 (the details were still being resolved when we went to press). This kit includes an EPROM (erasable PROM) burner, one EPROM chip, a PROM programmer device, an assembler/linker program, and a text editor so you can alter the MIDIttools' assembly-language routines and get the MIDIttools Computer to function as you'd like.

Tap Tempo Transmitter. With the MIDIttools Tap Tempo Transmitter, you can tap a MIDIttools button and the device will send MIDI clocks at a tempo determined by the length of time between your most recent button taps.

Available tempos range from 20 to 255 bpm. There's a tempo smoothing function that allows tempo changes of only 1 bpm per button press when engaged. In manual mode, the MIDIttools will only keep transmitting clocks as long as you keep hitting the button. If you stop, it will soon quit too. You can keep it sending clocks at the current tempo by hitting the “auto” button.

Three of the MIDIttools' front-panel buttons serve to send start, stop, and continue messages, and two of the 16 LEDs function as status indicators (“stopped” and “playing”). For some reason, the start and stop buttons and LEDs were reversed on our review unit

in comparison with the book's information.

Keyboard Mapper. Some of those expensive master keyboard controllers you find on the market provide capabilities such as multiple zoning, so that you can play different sounds across the keyboard. Unfortunately, too few keyboard synths let you assign different sections of the keyboard to transmit over independent MIDI channels.

The MIDIttools Keyboard Mapper addresses this problem. It lets you define three separate zones across your keyboard. You get to set both the top and bottom notes of zone 2, but only the top note of zone 1 and the

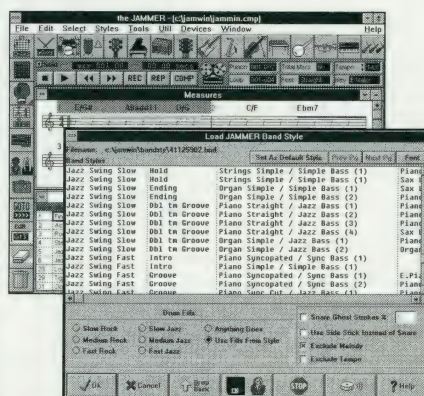
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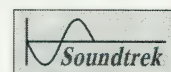


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bottom note of zone 3. Zone 1 starts at MIDI note 0, and zone 3 ends at note 127. The three zones can overlap, so some keys might transmit over two or three MIDI channels. What those channels are depends on the channel your MIDI controller transmits on, but the three channels are contiguous. That is, zone 1 transmits on the same channel your controller is set to, zone 2 transmits on the next higher channel, and zone 3 transmits on the second channel up from zone 1. Besides layering multiple sounds over certain keyboard ranges, the process can be used to mute a sound in a specific range.

In addition to remapping according to MIDI note number, the Keyboard Mapper can alter a note's MIDI channel based on its velocity. In this case the zone ranges define velocities rather than note numbers, and each key will be transmitted over any combination of three consecutive MIDI channels — depending on how you assign the velocity ranges.

Multi-Effector. The audio equivalent of this application is a signal processor that provides compression, limiting, expansion, delay, and gate functions. The MIDItools Multi-Effector provides operations with those same names, except they work on MIDI data instead of audio.

Gating will come in real handy if you want to avoid hearing or recording in a sequencer any notes that you unintentionally brush while playing. You can set the gate value anywhere from 0 to 127. The higher the value, the harder you have to play the note to get it through the gate. The limiter lets you define the highest velocity value that can be transmitted.

Compression and expansion are opposite effects, but the MIDItool allows you to choose a degree of either under the same parameter. With this parameter selected, turning the data knob counterclockwise from midnight increases compression; the higher the compression, the harder you have to play to get an equivalent velocity level. In contrast, from midnight clockwise you're working with expansion, which increases the further clockwise you turn the knob. In this case, you don't have to play as hard to get higher velocities. This allows someone with a weak touch to play consistently louder.

Delay lines can be lots of fun to play with, whether they be in the audio or MIDI realms. The best advantage of MIDI delay over an audio echo is that repetitions of the original don't have to be the same sound. You can trigger synthesized tones and sampled sounds over different MIDI channels, so a few Rhodes notes might mutate into heavy-metal guitar chords, chapel bells, or dinosaur burps.

In its stock state, the MIDItools Multi-Effector gives you three delay parameters to alter: the tempo, the delay spacing in note-value equivalents (whole, half, quarter, eighth, sixteenth, or 32nd), and your choice of one of eight decay algorithms (repeat at same velocity forever; divide velocity by two, four,

or eight each time until velocity equals zero; or subtract from velocity by two, four, eight, or 16 until velocity equals zero). This is a minimal set of parameters, and frankly the delay functions are seriously limited. For instance, the Multi-Effector only delays the last note you play, so playing chords and fast lines may not produce the results you expect.

What's neat about the Multi-Effector is that all four effects are available simultaneously. Four different LEDs, one per effect, blink to indicate when that effect is in . . . er . . . effect.

Conclusions. There's a considerable wealth of information to be gleaned by reading

Digital Projects for Musicians and constructing the MIDItools Computer. Assembling electronic kits can be soothing, therapeutic, and rewarding — somewhat like programming a computer or synthesizer, except that you use your hands in different ways and you get to smell melted solder. The process will take time, but in the end you should appreciate the knowledge you've gained. Besides that, you'll make some devices that you can use in your music-making. You'll have a hard time finding better guides than Messrs. Anderton, Moses, and Bartlett, their 365-page book, and the MIDItools Computer. *Bon voyage!* ■

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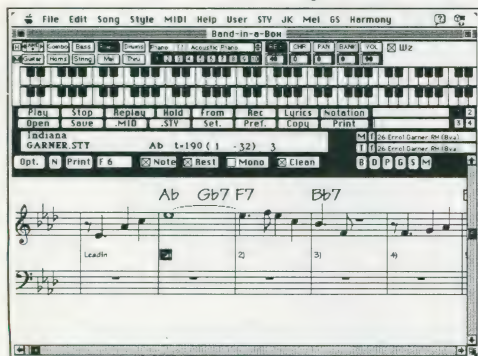
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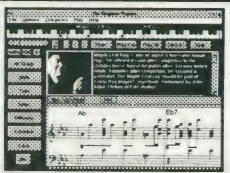
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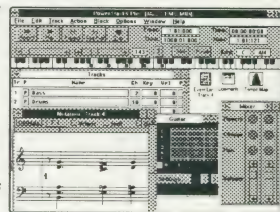
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JIM AIKIN



Sometimes you stumble on a truth where you least expect it. Like, you're reading about archeology or sitting in a business meeting, and you learn something about song-writing and playing in a band. . . .

Here's a curious fact: Before the invention of agriculture (in what is now Iraq, circa 8,000 B.C.), human beings were, on the average, taller and healthier than afterward. When our ancestors started building cities and laboring together in the fields, they were less well fed than before, had worse sanitation, undoubtedly passed around more diseases because they were packed closer together, and almost certainly died younger. The quality of life eroded, too. Hoeing the barley year after year is pretty dull compared to roaming the world with a stone-tipped spear.

And yet, agriculture triumphed. Except in a few remote corners of the world, the short, poorly fed city dwellers stamped out the tall, healthy savages.

The reason is not hard to see: A city can afford to feed everybody a little less in order to keep a standing army. With an army, you can take over the most fertile land, and a few savages with spears can't drive you off. Heck, "primitive" tribes don't even understand how to wage organized warfare. Personal glory and personal loyalty they understand. Marching obediently out in front of the cannons, no.

An African !Kung tribesman, one of the last of the hunter-gatherers, shared this bit of wisdom, which I've seen quoted more than once: "Why should we plant a crop, when God put so many mongongo nuts in the world?" A hunter-gatherer has a lot of items on the menu. Running out of berries? Climb a tree and get some eggs. A farmer has . . . maize. Baked, fried, or boiled, your choice.

But at least there's plenty of it. Unless there isn't. What we civilized folks inherited, along with paved roads, the alphabet, and other fascinating technologies, was the Fear of the Failed Harvest. Once you've gathered a bunch of people together in a small area and set them all to planting crops for a few generations, there's no turning back. The population grows, due to your ability to nourish (marginally, at least) more babies, and you quickly find that the population has bulked up past the natural carrying capacity of the land.

Also, once your community is fixed in one place, within a few generations you've hunted down most of the game animals in the region, so your dietary options are more limited. If the harvest fails, everybody starves, because the land doesn't produce enough mongongo nuts to feed all those extra mouths.



Civilization has its advantages, don't get me wrong. But there's a price to be paid. Ultimately, civilization and personal freedom coexist in an uneasy truce. In a civilized community it's important that everybody march to the same drummer. If a few rugged individualists develop an attitude about paying taxes, the whole edifice trembles. If one farmer diverts too much of the irrigation water, all the other fields run dry, so you need rules for how much water everybody is allowed, and big beefy guys with sharp spears to enforce the rules. And pretty soon the king starts thinking, "Hey, I'm surrounded by big beefy guys with sharp spears who do whatever I tell them! I must be pretty special." The king starts making up nasty, arbitrary rules that have nothing to do with keeping the granary full.

So in place of spontaneity, civilization gives us regimentation. In place of curiosity, it gives us conformity. In place of joy, safety (maybe . . . unless somebody with a bigger army covets your granary, or unless your neighbor's goat eats your crop, or unless. . .).

Last fall, as I was working on the first draft of this column, *Keyboard* associate publisher Dave Williamson called a special meeting to let the editorial staff know about his department's latest promotional campaigns. Normally, us editors (okay, we editors) have our hands full catching typos, interviewing artists, plugging in MIDI cables, and the like. On this particular afternoon, for a change, Dave brought us up to speed on his ongoing mandate to increase circulation. If you work for a corporation or even a small business, you've probably sat in meetings like that. How do we boost our sales?

One, Two, Three . . . Many

Dave wanted to show the staff "the numbers" so we'd understand the parameters of the situation. The term "profit margin" was bandied about. *Keyboard* turns a tidy profit, you understand, but it's important not to let the profit margin slip. If that happens, people in tall office buildings in London start scowling and making long-distance phone calls.

I found myself wondering: Why do we need to keep the profit margin up? What does it matter, really? If the company as a whole breaks even, or even loses money for a couple of years, isn't that basically okay? Isn't it okay if fewer people are reading the magazine this year? Maybe more will read it next year, or the year after. Or maybe the natural readership base of some magazine or other happens to shrink, because fewer people are riding on skateboards or collecting stamps. If we're selling 100,000 copies a month this year, and next year we're only selling 95,000 copies a month, why not congratulate ourselves for saving a few trees?

I didn't ask these questions at the meeting, you understand. It would have caused, probably, a brief uncomfortable silence, after which Dave (in real life a hot blues harmonica player, and certainly nobody's idea of a stuffed shirt) would have cleared his throat and shuffled some papers, and the meeting would have gone on as if I hadn't said a word.

Ideas like these simply can't be discussed in such a forum. The widespread belief in the inviolable importance of profitability is a fundamental tenet of free-market capitalism. You can entertain, if you choose, the idea that certain things — like maybe health care, or art, or the fate of the planet — are too important to be entrusted to the blind brutalities of the marketplace. But don't bring up such ideas in a staff meeting, or expect anybody in a position of power to take them seriously. Expect to be shouted down.

Any idea that is not open for discussion and debate is a religious dogma, pure and simple. Try to argue, and you're a heretic. Your ideas are heresy.

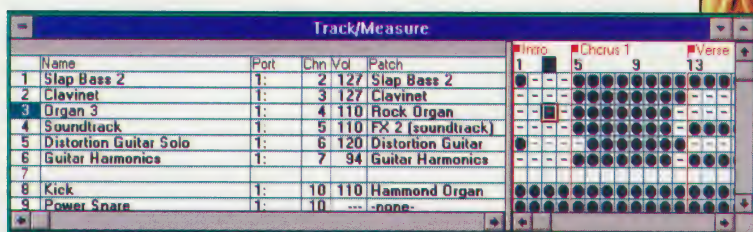
Naturally, those who adhere to a dogma don't like to think of themselves as wearing blinders; they have a lot of emotion invested in believing that they're rational and sensible and high-minded. The Medieval Catholics who burned heretics at the stake surely thought so. It wasn't that they were *afraid* of other ways of looking at the world, or of people who questioned their wisdom. Perish the thought! It was that the people who disagreed with them were just plain *wrong*. The punishment for being wrong was widely known, and if you were foolish enough to stubbornly persist in being

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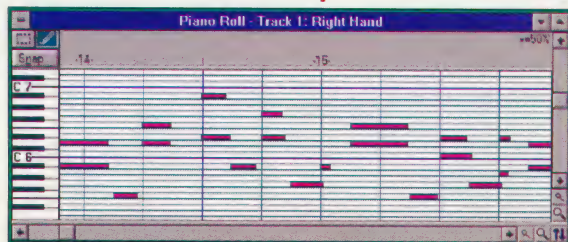
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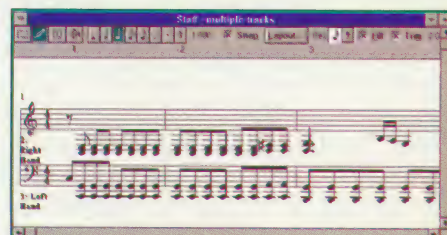
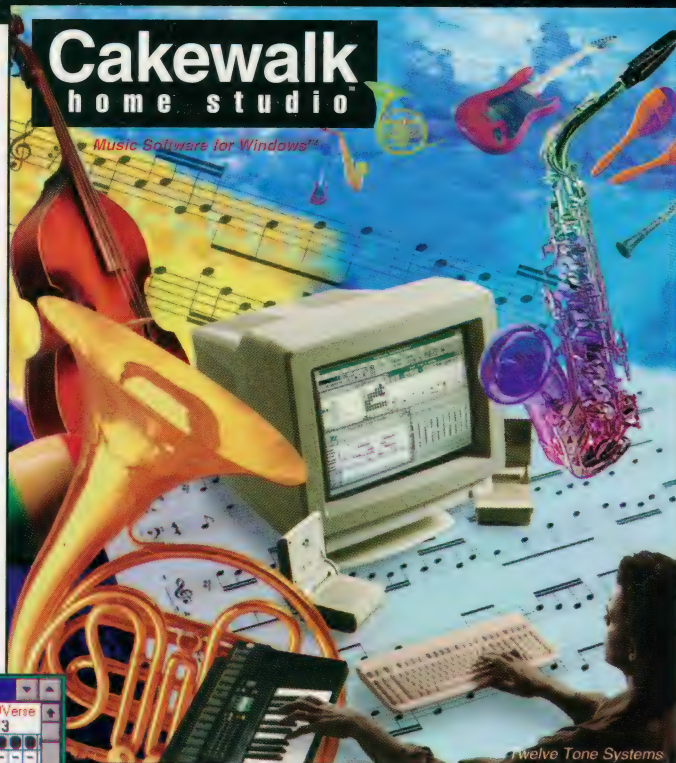
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"The Hi8 format is a superior recording medium, and it's a TASCAM."

"I can't help but notice the difference in the sound. Unbelievable."

"It locks up a helluva lot faster than our other digital multi-track recorder."

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other windows

wrong — well, so be it.

I know the idea will strike many people as baffling or obviously wrong-headed, but I don't think it's even faintly important how many copies of a magazine you sell, or how many copies of your next CD, or how many concert tickets. What's important, in magazines and music and human dealings of all kinds, is treating your fellow beings — human and otherwise — with love and respect.

Of course, plenty of people would agree with that, as long as they're having an informal *discussion* around the coffee machine. But when push comes to shove — when a corporation has to choose between profitability and acting with compassion for human and other living beings — well, the bottom line is the bottom line. No course of action that is incompatible with profitability stands much chance of being put into effect.

In the case of activities that involve disseminating information — songwriting and magazine publishing, for instance — the way you act with love and respect is to tell the truth. Telling the truth is the only thing that matters.

I'm certainly not out to insult my co-workers — or anybody else who works in a corporation, for that matter. My fellow Miller Freemanoids are decent, intelligent, creative people, and we all work hard to put out the best magazine we can. We *do* tell the truth, even when it impacts our ad revenue.

But then, we can afford to. We're profitable. If we weren't, or if somebody decided they needed to pump up the bottom line in a hurry, what would happen? Your guess is as good as mine. Anyway, truth, accuracy, and respect for the readers, as highly as everybody around here values them, weren't what was being discussed at that particular meeting. The meeting was strictly about ways to pump up "the numbers."

A hunter-gatherer doesn't have to worry about numbers. Hunter-gatherers don't even have any words for big numbers. Any number bigger than three is "many."

Clear as a bell, that staff meeting echoed with the Fear of the Failed Harvest. We dare not stop. We dare not slow down. If we don't feed the machine, we'll be out on the street. And there are *not* a lot of mongongo nuts growing in the back alleys of San Mateo. If there were, that guy sitting in the Safeway parking lot all day long with the hand-lettered cardboard sign could wander off somewhere else.

Herbert Hoover, or maybe it was Grover Cleveland, said, "The business of America is business." But I don't think the business of the artist is business. The business of the artist is art. Or better still, the art of the artist is art.

Art is not about numbers, it's about the human spirit. And deep in our souls we're still hunter-gatherers. Listen to the wind in the leaves, or the scream of a wildebeest being slaughtered by a lion. Squat around the campfire and sing about the wonder and terror of the world to your children and grandchildren. Art connects people with one another. It does that by informing us (literally, "in-forming": creating a structure in

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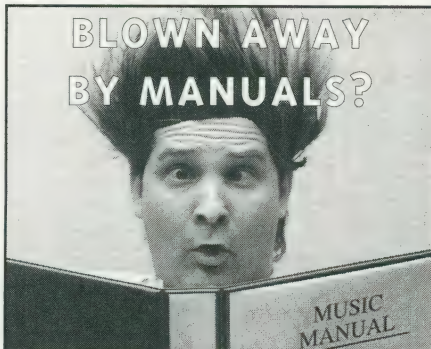
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our minds) what it means to be human.

Human beings have faces, and hands, and personal twitches. Interacting with them is often inconveniently complex. Technology is so much easier. But the more we "interact" with technology in preference to people, the more we deaden ourselves.

I'd love to play music in a group again. I'd love to interact with other musicians the way I used to, rather than sit all by myself day after day in a MIDI studio. I'd rather not go back to playing in bars, though. That's not the kind of human connection I have in mind. Maybe coffee shops. I'd like to play for listeners who are there to listen, who care about music and are sober enough to pay attention to the lyrics and appreciate a few subtleties.

For a group to work in a way that would nourish my soul, I think it would need to follow a few simple but unorthodox guidelines.

First guideline: We play for free. Ticket receipts, if any, go to causes that we believe in. We will accept voluntary donations to pay for renting the P.A. or whatever, but our music cannot be bought or sold; we share it freely with the people in our local community.

Second guideline: We don't count the size of the house. If three or four people ask us to play for them, we set up and play. More than three people in an audience . . . that's "many." "How big a crowd did you get last weekend?" "Oh, we played for many people."

Third guideline: We play only the music that

pleases us. Connecting with an audience and feeling their response is vital — and yet, paradoxically, if we count heads to see whether we're pleasing a larger proportion of the house when we play Tune A than Tune B, we're falling back into the Fear of the Failed Harvest. If *one* listener has a negative reaction to a song, and articulates her reaction in a way that makes sense, then the song probably needs to be changed, even if many other people say they like it fine the way it is. Conversely, if *one* listener is moved by a song, then maybe the fact that many other people don't get it is irrelevant. Maybe the other people just need to listen harder, or listen with a different spirit. Or maybe they need to listen to a different song right now.

For a marketing expert, this is heresy: How can it possibly make sense to say you should pay attention to the feelings of one listener and ignore the feelings of a thousand? The answer: You pay attention to your own feelings. You take the time to ask questions, to learn where that one listener is coming from . . . and then you mull it over until you reach, in your heart, an answer that makes sense to you.

As Mark Twain said, there are lies, damned lies, and statistics. And market demographics are a particularly virulent species of statistics. The answers to a public opinion poll can be biased in any direction the pollster desires; it's all in asking the questions that will get the results you've already decided on (maybe unconsciously; maybe even because your whole world-view

has a bias built into it). Ditto for "hard figures" like how many albums so-and-so sold. If it went platinum, or if it stified, so many factors are part of the equation — from the cover art to how much money was spent on payola — that sales figures can tell the artist absolutely nothing useful about the music itself.

When it comes time to decide what to play, or sing, or write, you're on your own. Absent a considered response from that one attentive listener, the only people who have the depth of understanding that's needed to choose music wisely are those who know music most intimately. If a casual or untrained listener is not qualified to dictate what a group should play, are ten thousand casual, untrained listeners any more qualified? Only to a statistician.

An A&R person who presumes to understand what those ten thousand listeners will respond to, and then attempts to force-feed the information to the artist — well, let's just ignore those misguided dullards, shall we? When they wave money in our faces, let's just laugh at them and walk away.

If members of an audience don't like your music, maybe it's not the right music for them. Maybe they're right to walk out. But if they do walk out, it doesn't really matter. You know why?

Because God put plenty of mongongo nuts in the world. ■

Jim Aikin is a heretic. It's not how he makes his living, however.

sounds

◀ Continued from page 82

Unfortunately, pressure is assigned to do almost nothing to the sounds in Series 1 (just in a few patch-select variations), and is barely used among the Series 2 instruments. That's really a shame, because the keyboard version of the ASR-10 is the only sampler on the market that can transmit and respond to both polyphonic and channel aftertouch. You'll have to program aftertouch response yourself for most of the SoundCreator instruments.

Dig Thru from Series 2 is one of the few instruments that *does* respond to aftertouch. When you press down on the keys while playing this massive square-wave timbre, the filter opens up slightly. The effect is more noticeable in the upper register, but it is polyphonic, which means you'll hear the note you press down appear to get slightly

louder than its neighbors. The soft and plucky WhatIsThis also responds to poly-pressure by opening the filter. In this case, the effect is less subtle and you can clearly hear the filter opening on low notes as well as high ones.

Three of the seven instruments on disk 5 of Series 2 respond to aftertouch. Key pressure on the fat, analog Fantasmigora and thinner E V H 1984 induces vibrato. On the mellow Fat 'n Fab, the filter opens up. In all three cases, the aftertouch is polyphonic.

The ASR's patch-select buttons are put to liberal use throughout both SoundCreator Series volumes, allowing you to perform such acrobatic acts as isolating separate components in a layer (as demonstrated by the flutey Mare Tranq, Series 1, and the reedy, digital-sounding River Styx, Series 2), converting a stereo sound into monaural

(Moogular, an analog brass instrument in Series 2) or vice-versa (the soft, muted This Is 4 U in Series 1), adding automated stereo panning (NoBummerDude, another analog brass sound in Series 2), or turning a polyphonic voice into one that's monophonic with portamento (Vintage Anlg, which sounds digital to our ears, and the layered, D-50ish Multiphonics, both from Series 2). Pangea, a digital-sounding layer of sax-like and plucky-flute timbres from Series 1, doesn't even sound in the bottom octave for two of the patch-select variations. In the case of ColdCut, the patch-selects evoke different variations of the same timbre. In one variation, there are two offset layers, the first coming from the right speaker followed by an echo-like reply from the left.

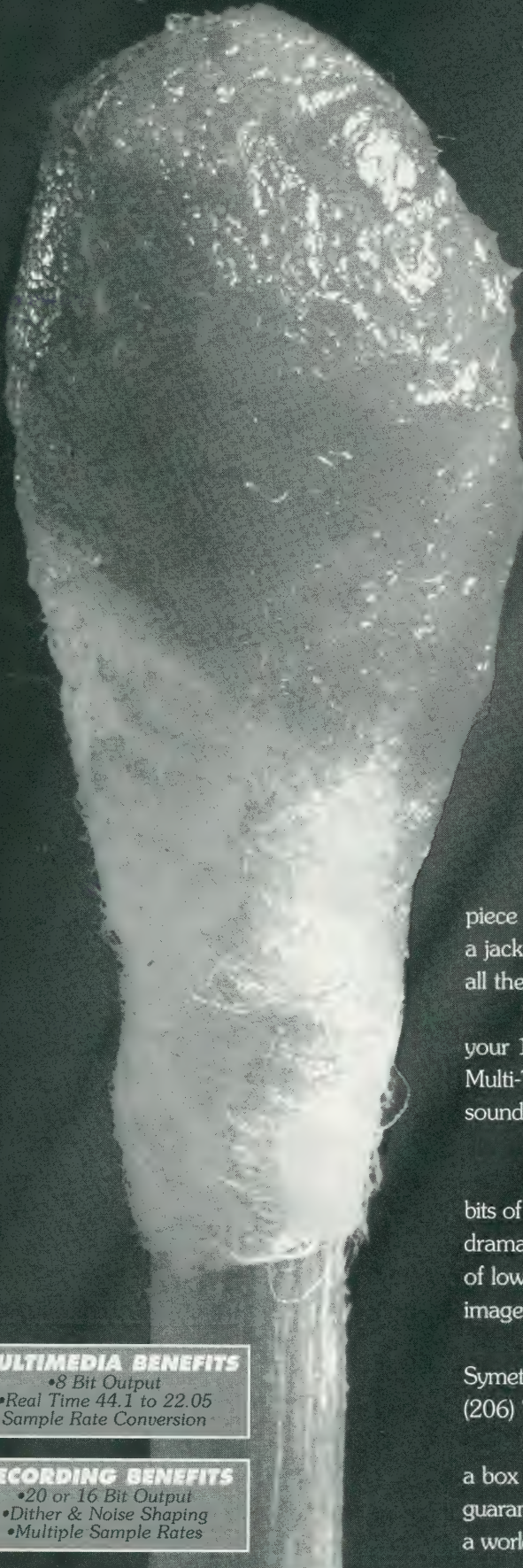
DB decided Bilén and Ramsberg could have done

much more creative programming of the effects throughout both SoundCreator Series. Too many SoundCreator instruments are simply bathed in concert hall reverb.

Documentation provided with each SoundCreator Series is limited to one sheet per disk that provides block size and a pseudo-descriptive title for each patch-select configuration. More text would have been welcome.

No banks were included on any of the Bilén-Ramsberg disks we received for review. Niklas Ramsberg reports banks will be stored on disks shipped from now on, as long as they have enough space (a couple of Series 2 disks come up a bit short).

Aside from their lack of aftertouch response, both of the current SoundCreator volumes provide a number of potentially useful and inspiring sounds to work with. —MV ■



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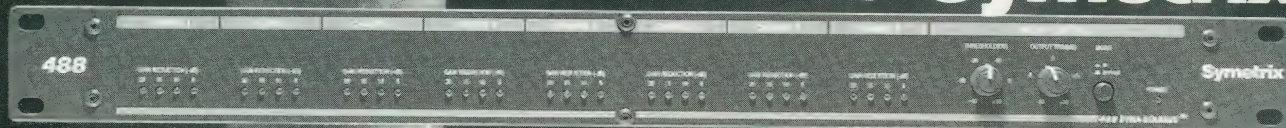
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BRUCE HORNSBY

Hot House (RCA).

As sequenced rhythms and minimal melodies tighten their grip on the pop charts, Hornsby grows more visible as a master of high-craft songwriting and real-time blowing. And *Hot House* is his greatest anachronism to date. More than any Hornsby album, it's a burner. The first sound you hear on track 1, "Spider Fingers," is a nimble repeated-note piano riff, which a horn section quickly picks up. This funky touch fits neatly amidst more familiar devices: On this cut, the parallel piano and organ figure that leads to the solo section has that down-home Hornsby feel. But a jazz vibe also colors *Hot House*, much of it due to the presence of Pat Metheny on a number of tunes, and more still to Hornsby's own work. He tears it up on solo after solo, often with solid, confident right-hand lines over open voicings in the left. "Spider Fingers" is especially cool, with the most articulate and exciting Hornsby piano solo since "The Way It Is." A Leon Russell influence erupts

in the gospel-like, alternating-hands runs of "White Wheeled Limo," which also features a lively collision of jump blues and bluegrass elements, with Hornsby, banjoist Bela Fleck, and perennial Hornsby drummer John Molo at the controls. At times Molo's fixation with the back-beat gets in the way of what might have become a really explosive jam: "The Changes" could use a looser, more interactive snare, especially on the chorus. On the other hand, organist J. T. Thomas performs flawlessly. His quick-change Leslie work and growling textures light fires in the background, and his solos eloquently reflect the Garth Hudson school of bent-note effects and carnival registrations, most noticeably in the 9/8 framework of "The Changes." From the keyboard perspective, *Hot House* is the peak of Hornsby's achievement to date. The joy that animates his playing is both obvious and contagious.

WILLIAM SCHIMMEL

Dead End Ave. (Newport Classic, 106 Putnam St., Prov-

idence, RI 02909).

When you're this good, you can get away with being this cheeky. Schimmel mutates odds and ends from classical and pop repertoire in this solo accordion *tour de force*. It's not exactly scholarly, nor is it a P.D.Q. Bachian lampoon. Rather, *Dead End Ave.* is an exercise in irreverence. "Take Five" provides a motivic and harmonic reference for "Take Four," an otherwise completely dissimilar piece marked by melodramatic dynamics and rubato in, of course, 4/4.

"Sibelius's *Tango Finlandia*" is even more impish, with the familiar theme transplanted from its pastoral program to a cabaret dance floor. "Wagner *Is Debussy*" explores what Schimmel sees as the common ground between the shimmers of Impressionism and Wagner's darker hues. Not into the classics? Try "Hard Lovin'," where Cajun rhythms and smeared thirds dance unimpeded by Schimmel's legit technique. Then there's "Gershwin's Rhapsody in Blue(s)," which squeezes the classic original into a three-minute package laced by funky minor sevenths and riddled by comically overblown inner voices. What keeps *Dead End Ave.* from sinking into parody is Schimmel's integrity. He carefully highlights details (e.g., his own weird spoken asides on "Hard Lovin'") with a respect for their contextual oddity, yet ties each piece together with an unfailing artistic comprehension. No matter where you're coming from, you'll enjoy cruising *Dead End Ave.*

SVEN VÅTH & VARIOUS ARTISTS

Touch Themes of Harlequin, Robot, Ballet Dancer (Eye Q, dist. by Warner Bros.).

A new Sven Våth release, *The*



Harlequin, the Robot, and the Ballet Dancer, came out about a month ago in the States after racking up strong reviews in Europe. Right on its heels comes this disc, on which the *Harlequin* tracks are subjected to some ear-opening remixes. A comparison of the two albums yields insights and raises questions. On Alter Ego's version of "Harlequin Plays Bells" (the "Hell's Bells" mix), the groove is a little bumpier than Våth's, with a lighter, more prominent snare and a more syncopated bass drum. There's more space too, with a filmy, slow motif floating behind percussion and staccato synth parts that show more contrast but blend less smoothly than the original. Våth's "Harlequin: The Beauty and the Beast" is streamlined, with lots of propulsive syncopation and a synth rhythm hook reminiscent of DAF; the remix, by Underworld, wraps the bass drum in an unusually reverberant shell, makes the groove more regular, adds a chorded harmony to the background and a rubbery glisséd synth figure to the middle, and otherwise dampens the overall luster. The most extensive remodelling was done by Aural Float, who transforms "The Birth of Robby" from a sleek and streamlined high-gloss arrangement to a denser blend of Kraftwerkian filter crawls and a four-beat sound that somehow suggests "I Am

the Walrus." And so on down the line, as the remixers darken the crystalline foundations and diamond-like textures of Vâth's busy yet coherent rhythm tracks. The differences are often so huge that one has to wonder why remixers don't just start from scratch with their own original works more often. The answer, of course, is that remixers are comparable to jazz pianists who take a standard tune and personalize it. It's too soon to welcome the contributors to *Touch Themes* as heirs to the spirit of Bill Evans and Oscar Peterson. But it's not too early to recognize that there's creativity to spare among these multi-track magicians.

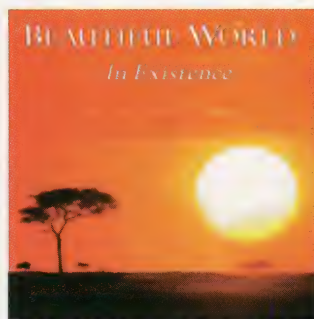


HAPPY FAMILY

Happy Family (Cuneiform, Box 8427, Silver Spring, MD 20907-8427).

Fans of hard-core avant-jazz may want to push their Medeski Martin & Wood CDs out of the way to make room for Happy Family. On their debut release, this young quartet builds its performances on tension generated through whipsawing between ensemble discipline and almost violent episodes of free improvisation. Keyboardist Kenichi Morimoto appears to be the leader: He writes most of the material, in which various members of the group hammer spiky, dissonant themes through kaleidoscopic metrical swirls while drummer Keiichi Nagase thrashes with a breathtaking combination of aggression and energy. Most of the time, Morimoto plays written parts, which involve quick patch changes and lots of chops. He comes up with fresh sound combinations: The staccato piano melts perfectly into Shigeru

Makino's distorted guitar line in the unison theme to "Naked King," and his cranky, squawking sax samples are just the right noise to scatter around the guitar in the intricate interplay of "Rolling the Law Court." But when Morimoto stretches out, he is truly awesome: His synth solo on "Kaiten (Nin-gen Gyorai)," on something resembling an electric organ patch, slashes with a savage fury, yet the notes he selects trace an illuminating path through hostile harmonic territory. Reportedly this band plays only six times a year, at the Silver Elephant in Tokyo. No matter where you live, it's almost worth buying a ticket and flying to Japan to see these guys in action.



BEAUTIFUL WORLD

... In Existence (Discovery Records, 2052 Broadway, Santa Monica, CA 90404). It's a small world, after all — in this case, a few singers and one impressive artist. Under the Beautiful World aegis, Philip Sawyer offers a largely electronic world music selection. Like another exceptional synthesist, Wally Badarou, he paints a multicultural landscape without resorting to ethnic samples or devices. The vocals — in English, French, Swahili, and Hopi — and Sawyer's compelling textures instill a filmic quality into his songs, with melodies that sweep over blossoming chords or hang above delicate single notes like clouds over a desert. There's wonderful artistry in every corner of this record, but especially in the way Sawyer creates an impression of textural depth with the most minimal material, often with a single string line or soft fifths and suspen-

sions: A low drone beneath evocative motivic figures, with wisps of synth and distant chant blowing over one another, begins our journey down "The Silk Road," while open voicings and a gentle Afro-pop groove of "I Know" create a context in which the triadic vocal harmonies going into the chorus sound especially rich. Sawyer's real accomplishment is to create an epic perspective through understatement rather than through shoving big stuff in our face, à la Vangelis. As a result, we're continually drawn into the spaces of the music until the caravan tread and sparkling, mirage-like piano on the last track, "The Final Solution," leave us grasping after echoes and thirsty for another visit to Sawyer's world.



FLOPPY SOUNDS

Downtime (Wave Music, 254 W. 54th St., New York, NY 10019-5516).

There's noise, and there's music. Where does the dividing line fall? Somewhere, perhaps, in the realm of Floppy Sounds. This trio — Rob Rives, Lane Craven, and Will Soto — follows the path of sample manipulation and other sonic abstractions juxtaposed over a rhythm track. While not exactly original, their work is powerfully suggestive. Ethnic and electronic elements thread their 4/4 grooves to create a landscape that's familiar, yet elusive. Sampled voices add to this dichotomy: A tearful outburst at the end of "Ultrasong," and an extended monolog from someone's departed daughter on "Since I Split," create a sense of disconnection, with their immediacy subverted by the fact that both come from

over the phone from someplace far away. Even when the group lets a little humor intrude, the effect is disturbing: HAL's demise from 2001: A *Space Odyssey* turns up in "Daisy," as the bass drum beat, buzzing synth figure, and resonant effects crumble and collapse. Most of the sound on *Downtime* is noisy and musical at the same time: Though the racket at the beginning of "Oblivion" and the analog tweeze that follows can't be notated, the song's sense of development and dynamics is unambiguously musical. You can definitely dance to *Downtime*, and, to your surprise, you might even end up thinking you can sing to it too.

FAST FORWARD ROCK

Drywall, Work the Dumb Oracle (IRS). Stan Ridgway's trio explores the L.A. ethos in 12 electro/industrial meditations, with Pietra Wextun and Ridgway on keys. Ancient synth textures, including filterish ray-gun bleeps on "Highway Song" and creepy quotes on wheeze organ ("Frère Jacques" and "Never Never Land" in the Menendez brothers paean, "Bel Air Blues") stir up a postmodern mood.

Nitzer Ebb, Big Hit (Geffen). Analog synths hack around NE's migraine grooves. Bon Harris makes most of the electronic noise, with help from Douglas McCarthy and Flood. It's all pretty basic, but every snarl is perfectly positioned around guitar, bass, and drum parts. Unusually expressive vocals, by the way.

Adam Wakeman, 100 Years Overtime (President Records, Exmouth House, 11 Pine St., London EC1R 0JH, England). The focus is on the songs, as Wakeman *fills* relegates the keys to the background for this set of mainstream songs. But in his accompaniment there are hints of fireworks ready to ignite — perhaps, judging from his piano solo on "Too Long Dead," in the jazz arena.

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Courtesy Phone (Almo Sounds, 360 N. La Cienega Blvd., Los Angeles, CA 90048-1925). Party music with a Tex-Mex flavor, courtesy of Angel's elementary but effective accordion riffs. Nothing epochal, just a reminder of how hot a bit of bellows can be, even when buried in the rhythm section.

DANCE

Technotronic, Recall (SBK, dist. by EMI). The hyper house style made famous by Jo Bogaert flashes back on these dozen pulse-quickening tracks. Ya Kid K declaims over steady dry bass drums, eighths-and-quarters on the hi-hat, and analog synth parts that generally stick to minor modes and milk a surprising amount of power from spare arrangements.

Rockers Hi Fi, Rockers to Rockers (Gee Street Independent, dist. by Island). Fuzzy synth bass, Clav twangs, looped organ vamps, Electric Prune-like overkill reverb: It's '90s music! Credit DJ Dick and Glyn Bush for the deep dub rhythms and hypnotic vintage textures.

AMBIENT/DANCE

Intermix, Future Primitives (ESP-SUN, dist. by Roadrunner, 538 Broadway, New York, NY 10012). Bill Leeb and Rhys Fulber take a break from Front Line Assembly with this atmospheric ambient/dance collection, which is bristling with interwoven synth lines, washed by spacey filter sweeps, and liberally seasoned with ethnic vocal samples. It's a little less intense than some other Leeb/Fulber collaborations, and not quite as adventurous as some might expect.

AMBIENT/ALTERNATIVE

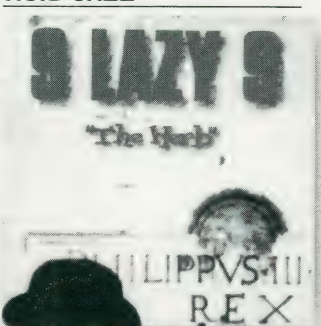
Zero Gravity, Space Does Not Care (Hypnotic, dist. by Caroline). Analog mania, courtesy of Len Del Rio, keyboard sidekick

to Hawkwind co-founder Nik Turner. Long drones, proto-string synth timbres reminiscent of "Trans-Europe Express," bursts of cyborg percussion, and other details flash through *Space* like psychedelic tracers. Aside from a few brief pauses, it's basically a nonstop trip. We recommend good headphones and a comfy beanbag chair.

R&B

Rosie Gaines, Closer Than Close (Motown). She played behind that skinny guy when he was still Prince, and now she's on her own. A versatile singer, Gaines also handles synth and piano parts; she solos a bit and plays appropriately in several R&B styles (including vintage '70s on "Turn Your Lights Down Low"). But aside from some fiery fills on "Concrete Jungle," she seldom stretches enough to let us know whether her chops match her pipes.

ACID JAZZ



9 Lazy 9, The Herb (Shadow, 111 E. 14th St., #338, New York, NY 10003). Hip piano chords, smoky bits of sax, and easy-going hip-hop rhythms, all assembled by James Braddell and Kier Fraser. Samples, dropped here and there without much apparent conceptual design, confuse rather than clarify contexts on several cuts. More live playing next time, please.

JAZZ

Junko Onishi, Live at the Village Vanguard (Blue Note). On her second American release, the 27-year-old pianist displays a probing musical inventiveness and a hard-driving, Monk-inflected style. Clever melodic twists and chord tweaks show Onishi's ability to find fresh ideas in simple standards like "Blue Skies" and "Darn That Dream."

Bruce Barth, Morning Call (Enja). Barth has the right combination of swing and imagination as a soloist, but it's his compositional and arrangement sense that distinguish this quintet date. Check out the outstanding reconstruction of "April in Paris."

BLUES

Johnnie Johnson, Johnnie Be Back (MusicMasters, dist. by BMG). Johnson moves way past Chuck Berry's shadow in this all-star blowfest. James Wormworth, Max Weinberg, and Steve Jordan lay down serious grooves as Johnson struts his piano stuff, a bit slower and lower but far deeper than on the classic Berry sides. Tasty organ contributions from Al Kooper flesh out a couple of cuts.

Oxford Blues, Rowena Said... (Oxford Blues, FDR Station, Box 143, New York, NY 10150). Bandleader Doña Oxford is a double-threat singer and player, well equipped with a soulful voice and a good-time, rolling feel on what sounds like a digital piano and a Hammond Suzuki XB-2. Her solo romp, "Doc's Blues," proves that a player who takes her time with the blues can impress more than someone bent on showing off slippery licks.

NEW AGE

Michael Gettel, The Art of Nature (Narada). Delicate and reflective, with sparkling acoustic lines washed by bracing or soothing electronic textures, these instrumental studies are built on sturdy verse/chorus structures, with Paul Winterish soprano sax and stylistically correct neo-Winstonisms in the piano parts. Gettel's sophisticated ear for writing and orchestrating keeps the sound of *Nature* fresh.

CLASSICAL

Anthony de Mare, Frederic Rzewski (OO Discs, 261 Groovers Ave., Black Rock, CT 06605-3452). De Mare articulates difficult clustered passages in Rzewski's *Piano Piece No. 4* and handles the folk song quotes in *Piano Sonata* with wit and verve. But his interpretations of the chilling *Winnboro Cotton Mill Blues* and the astonishing *De Profundis*, with its stylistic clashes,

anarchic effects, and extensive texts from Oscar Wilde, best reflect the narrative power of Rzewski's music.

Geoff Smith, Fifteen Wild Decembers (Sony Classical). Smith's obsessive 6/8 cycles and intricate overlaid rhythms are tempered by a traditional linear and structural approach ("Possess Me") and the robustly expressive singing of Nicola Walker Smith. It's textbook minimalism, with a few agreeable surprises, especially on "The Rainpools Are Happy," whose muffled isolated notes, minor mode, and silences owe more to Harold Budd than to Steve Reich.

MOR

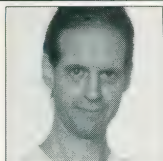
Val Gardena, On the Bridge (PolyGram). Beautifully crafted instrumental studies. Christopher James and Jeff Leonard, a.k.a. Val Gardena, excel at illuminating details of their songs with contrasts of sparkling and darker synth textures.

Matthew Levine, The Big Idea (Concourse International, 3020 Issaquah Pine Lake S.E., #540, Issaquah, WA 98027). Levine's vibrato-free vocals, mostly propagating a Christian message, work better in harmony than in solo sermon mode, but his synth and piano chops are fairly solid, and his songs are both catchy and sophisticated in a way Steely Dan fans might appreciate.

Dan Siegel, Hemispheres (Playfull, dist. by Sunset Blvd. Entertainment, 740 N. La Brea Ave., 1st Floor, Los Angeles, CA 90038). Siegel has an ear for timbre and a feel for arranging percussion samples. Unfortunately, his material is so insubstantial, and the playing of some sidemen feels so tentative, that it all slides down a bit too smoothly.

Dino, Miracles (Benson Music Group, 365 Great Circle Rd., Nashville, TN 37228). An assembly of spirits, from the sacred to the secular spectres of Ferrante & Teicher, galvanizes this exegesis of Biblical texts. The Royal London Orchestra evokes the Red Sea partition, the babble of animals on the Ark, and other events as frameworks for Dino Kartsonakis's incendiary pianism. ■

inside the music



DAVE STEWART

My Heart Declares A Holiday

It was my privilege, at the beginning of 1994, to be granted an audience with my mentor, the reclusive Scottish home organist Eric McWhirter, revered in his native Arbroath (though largely unknown elsewhere) as the "Rachmaninov of the Wurlitzer." Our meeting spanned a mere three hours, but those three hours seemed more like 18 as Eric rambled on discursively, his words, like his music, a seamless stream of consciousness refreshingly free of petty bourgeois restrictions such as form or meaning. It was a humbling experience for me to sit in the presence of the master, listen (albeit uncomprehendingly) to him talk, hear him play, and finally, for a few heart-stopping moments at the end of the interview, clamber onto his organ bench for an impromptu duet on the Bacharach/David classic "Raindrops Keep Falling on My Head," the latter producing timeless antiphonal cadences of such overwhelming

beauty I had trouble not bursting into tears. (Watch these pages for a transcription of this unique McWhirter/Stewart collaboration. Jim Aikin, who has been working on the tape for a year, says, "I've nearly worked it out — this material is some of the most profoundly polytonal I've ever heard, on top of which the players seem to be operating with total rhythmic independence.") My ensuing article on the tortured Scottish genius (printed in the April '94 issue of *Keyboard*) provoked a storm of responses from readers and kept our postman busy for months. Apart from one or two whingers complaining that the article "didn't make sense," the feedback was almost universally positive, none more so than this letter signed simply "Grateful of Northern New York":

As a home organist, I unfortunately have not regularly read Keyboard, but I now plan

on beginning to. A friend recently sent me a copy of your April '94 issue which included the fine article on Eric McWhirter, and it is because of this I am sending my congratulations, plus one personal memory of this remarkable man to share with your readers.

During the late '60s when I was a rock keyboard player, I was lucky enough to be at the Fillmore East when McWhirter presented his one and only 'Psychedelic Home Organ' concert. I can clearly remember McWhirter onstage with his Hammond S-6 chord organ played through about six Vox Super Beatles. The light show was fantastic and we were treated to some of the finest organ playing I had ever heard. The audience, though small, was studded with celebrities: Grace Slick and Karen Carpenter danced together in a dark corner, the young organist with the Nice (that's right — Keith Emerson) watched intently from the wings, and Pete Townshend jumped on stage to jam on a couple of tunes. He asked McWhirter, "Oi, Eric — want to smash things up a bit?" and McWhirter brought down the house with his answer — "Aye," he quipped, "and lose the deposit on this gear? Not bloody likely!"

And of course the music. Music I had never been exposed to before: "The Beer Barrel Polka" (you should have seen those hippies dance), "Oh Danny Boy" (not a dry eye in the place), and dozens more! All with McWhirter pounding out the chords with his left index finger, chopping the rhythm with his wrist [Ed. Note: Some mistake?], and creating intricate bass lines on the S-6's two pedals. This experience opened me up to the whole new world of music. I sold my Farfisa Fast 5, bought an Allen Carousel, and never looked back! Thank you for bringing back those wonderful memories, and thank you Eric McWhirter for changing my life.

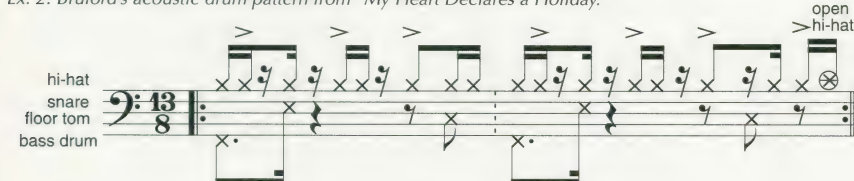
Do any other readers have similar happy memories of McWhirter concerts? Little is known about the early days of the great man's career, and still less about his personal life (though rumours about his relationship with a shadowy and enigmatic figure known as Mrs. Cruikshank abound). If Eric McWhirter's home organ playing changed your life, or if you have some revealing information about this giant of the home console, send your recollections/tributes/album

Continued on page 143 ►

Ex. 1. The keyboard part played by Django Bates on "My Heart Declares a Holiday," which he co-wrote with fellow Earthworks band-mates Bill Bruford and Iain Ballamy. The piece appears on their first album.



Ex. 2. Bruford's acoustic drum pattern from "My Heart Declares a Holiday."



Ex. 3. Ballamy's sax joins in during this section, doubling the top keyboard notes along with the bass.



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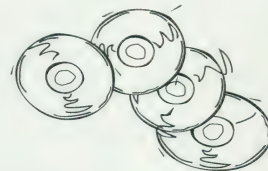
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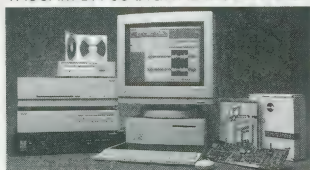
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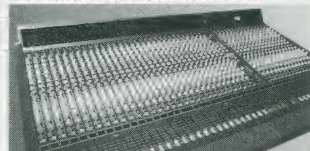
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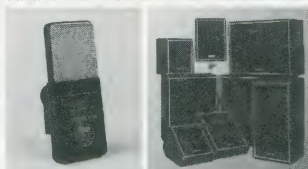
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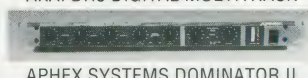
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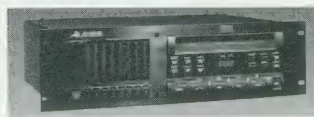
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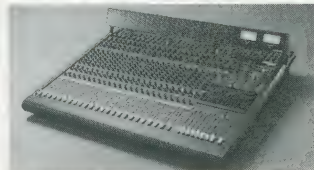
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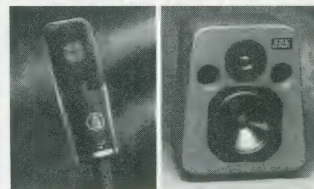
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Hot Flashes From The Computer Game Developers Conference

Along with the expected shakeout in multimedia title development over the next year, many people are expecting a shakeout in the number of multimedia trade shows. There are so many shows to attend, either to exhibit, to gaze, or to schmooze, that no one can get any work done.

The one exception is the Computer Game Developers Conference, held this year over the weekend of Apr. 22-25 at the Santa Clara Convention Center. For those in the know, this is the one show not to miss. Attended by those who actually *create* the titles — from programmers to artists to composers — this event has less hype and more substance than any other.

While I attended more panel discussions and brought back more announcements than will fit within the scope of this column, I do want to let you know about the most intriguing developments in three main areas — software, hardware, and titles. I've picked one example from each area.

Microsoft MIDI Beefed Up

First up, a little-known West Coast company called Microsoft debuted their DirectSound API. (API stands for "application programming interface," a software device used by programmers to add power to their applications). DirectSound was introduced by Alex St. John (MS Games Technical Evangelist), Jeff Dahl (MS Audio Lead for Windows), and John Miles (Miles Design); its features will be available in Windows 95. Miles was consulted

extensively for his expertise in implementing these features, as his AIL drivers have been used successfully by many developers for including audio in DOS programs.

The first thing Dahl revealed was that Microsoft has finally moved away from what is known as "Microsoft MIDI," which offered multimedia developers a lackluster implementation of either four or 12 MIDI channels. This announcement brought a loud round of applause from those in the audience who have had to deal with this restrictive implementation in the past. The new implementation offers 16 channels of General MIDI, and Microsoft is looking into downloadable sounds and other enhancements.

Windows 95 will offer different levels of control, depending on what the situation requires. Operating at a high level under MCI (Media Control Interface) control, developers will be able to provide simple playback of MIDI files with basic controls such as play, stop, and pause. The editing of notes, changing of tempos, and other types of controls are hidden from the end-user at this level, as its main purpose is for simple playback of files.

Low-level control is now possible through the "MIDI Streams" feature in Win95. MIDI messages can be time-stamped and buffered

in advance, so that the system can take care of when they are played, how tempos are adjusted, and so on. What this translates to is the ability to "buffer ahead" by a couple of bars, which will allow for smooth transitions from "one room to another"



Broderbund's *In the First Degree* promises to be a breakthrough in live-action CD-ROM gaming.

in a typical game. MIDI messages will sit in a queue, so there should be little or no "dead air" between files (as well as less competition with the CPU, which is always heavily occupied with graphics processing).

It will also be possible to have a MIDI loop playing while the system queues up a new file for playback at the proper time. Standard MIDI files can be converted on the fly into streamed MIDI files, or the music can be authored as streamed MIDI files in the first place. The only disadvantage to pre-authoring is that it takes up more memory — but then, we might be talking about a 20K MIDI file which becomes a 60K MIDI file, which is still very small by most standards.

The other interesting audio development from Microsoft is DirectSound, which will be released in the Windows Games SDK (Software Development Kit). DirectSound will offer "high-fidelity, low-latency mixing and playback of up to eight audio streams at four times the speed possible today," according to Microsoft's fact sheet. "It allows volume, frequency, and pan controls of each stream. Typical latency to start sound playback will be less than 50ms, compared to approximately 200ms under current .WAV drivers." What that means, in everyday terms, is that you can have the digital sound of bomb explosions, laser guns, air-to-air



3DO's 64-bit game platform will push the envelope with spectacular graphics power.

missiles, and a ton of other stuff all going off at the same time without excessive delay. According to Dahl, this implementation minimizes CPU overhead so that graphics capabilities will not suffer. To a game developer, this is heaven.

The "frequency" referred to in the fact sheet is frequency shifting — that is, altering the pitch of the original sound significantly. This is obviously great for effects, and having individual volume and panning controls per channel never hurt anybody either. More good news: All these features are "scalable," meaning that if the user's hardware is capable of utilizing them, the software doesn't have to worry about it, which nets even faster performance.

Okay, but can this DirectSound stuff work with the new MIDI stream playback going on at the same time? You bet.

DirectSound buffers can have individual characteristics — they can be looped or unlooped, mono or stereo, 8-bit or 16-bit, 11kHz or 22kHz — with different types capable of being mixed together. But wait, there's more. DirectSound will also do 3D sound. 3D sound is sometimes interpreted as meaning a wider stereo field or a bigger "sweet spot" for stereo listening. Microsoft claims that in addition to this, DirectSound offers true 3D placement, meaning, for example, that a sound can apparently move from the front and slightly to the right of the user to behind and to the left. In addition to control of the sound *sources*, DirectSound allows the listener's sound *perspective* to change, so that when a user moves their head from left to right, the sound will change accordingly. The 3D features will be available in software as well as dedicated hardware systems.

Additional support is planned for such features as downloadable sounds and streaming digital audio off of disc, but those capabilities were just touched upon lightly at the demonstration. Speaking of demonstrations, attendees were encouraged to go to the Microsoft suite to see the real thing in action. I did so later that night, only to find that the sound demo was not working. The *hors d'oeuvres* and liquid refreshments seemed to work just fine, however.

Next Generation from 3DO

With so much attention focussed lately on the Sony Playstation and Sega Saturn, it was a bit of a surprise to hear the presentation from 3DO on their next-generation platform. Currently known as "M2," the high-end gaming device will come in two flavors: as a stand-alone machine and as an add-on to the current 3DO player. The potpourri of specs includes: 66MHz Power PC 602 mi-

croprocessor (the same one used in Apple's recent Newtons), 64-bit bus architecture, and 24-bit color. The machine is theoretically capable of displaying a million polygons per second (compared to the mere 60 to 100 thousand polygons typical of current systems).

The 3DO presentation included reports from developers who claimed speeds five to seven times faster than the Sony Playstation and two to four times faster than Nintendo's Ultra 64. The new player will play earlier titles just fine, with the original 32-bit RISC processor handling all of the computing chores. Despite the specs and features, one 3DO employee confided in me that "it's the titles that will make the ultimate difference." We'll see.

Broderbund's First Degree

Last month I lamented that it's been a long time since a game of the quality of *The Seventh Guest* or *Myst* has been released. I might be able to eat those words before long. Broderbund held a press conference to show off their upcoming summer release *In the First Degree*, which puts the player in the role of a prosecuting attorney dealing with a defendant, many witnesses, and television newscasters as well as an arch-rival attorney. While not intentionally exploiting the theme of another famous trial (*First Degree* has been in development for two years), the game does take advantage of the best possible blue-screen techniques to lend a realistic feel to the two-disc CD-ROM package. It has a terrific look.

Production partners Adair & Armstrong tested the title in a text-only version first, to determine whether or not the story stood up on its own and whether the branching schemes worked well. The live action shoot was condensed into a nine-day schedule. Additional footage from the San Francisco Bay Area's KTVU news team provides players with feedback on their prosecuting abilities.

This could be an ideal marriage of video with interactivity, as a prosecuting attorney must make numerous decisions as to which witnesses to interview, which ones to call to the stand, what to ask them, and *how* to ask it. With professional actors and camera techniques and a quality music score, *In the First Degree* may have the makings of a hit. For everyone's sake, I hope so. ■

Bob Safir is president of InterOctave, a San Jose/L.A. company specializing in original music and sound design for interactive multimedia, and a former multimedia product manager at Microsoft and product manager at E-mu Systems. He is the founder and co-chairman of the Interactive Audio SIG of the MIDI Manufacturers Association.

◀ *Continued from page 152*

playing with which one you emphasize. Let them sink in deep and roll around. *What* do you want to do. *What do* you want to do. *What do you* want to do. *What do you* want to do. . . .

Go on. Think really hard and then answer honestly. You're floating free in space, with nobody to hear and absolutely nothing to stop you. It's as close to the pure well of creation as your conscious mind is ever going to get, and the answer you find matters accordingly.

Alone is never really alone. Take everything else away and you are left smack in the crowded middle of your *own* unrealized possibilities. Make all the human beings and non-pigeons disappear and you will feel, soon enough, the empty dangling half of your link to every one of them.

Alone is an illusion. But it's a useful one, because "alone" is also the time when you get to choose. Your parents aren't here with you, drifting where a world used to be. Your teachers aren't here. Neither are your children, if you have any, or the friends and mates and significant others who have decorated and shaped your life. Here, none of the choices you have made before this time matters, for in this place you are no longer defined by your packaging or your history or anything outside yourself at all. Here you are a not-yet-opened box.

Inside that box you may find nothing surprising. That happens. Some people really do know themselves. But it's likelier that you will find dreams and aspirations you have forgotten, given up, or written off. If so, my echoing question becomes even more important.

Why? Because now you cannot leave this place without choosing. And there are only two options:

(1) Take up the challenge you have found? That's the liberating choice. (Perhaps a difficult one, as well, depending on how many barriers to your dreams you have raised or accepted over the years. It may require lots more work than what you are doing now, and test the understanding of the important people in your life.)

(2) Slam the box-lid and pretend the challenge isn't there? That's a choice as well. But having opened the box at all, choosing this option could nag uncomfortably at you for a long, long time to come.

All choice shapes your future. All choices yield change. This truth makes "alone" that brief condition where you have a chance to reflect on yourself free of outside influences, and then change your course if that is called for. To start out right . . . or start out right *at last*.

So. What do you want to do?

Don't take too long thinking. It's checkout time at the Hyatt House Aldebaran. The global grapefruit sections have been stitched back together, the mountains patted into shape, the oceans cleaned and filtered. As soon as they've put back all the fossils, I'm going to snap my fingers and rematerialize the world. From my own direct experience I suggest you be ready with your choice. The pigeons will want to know. ■

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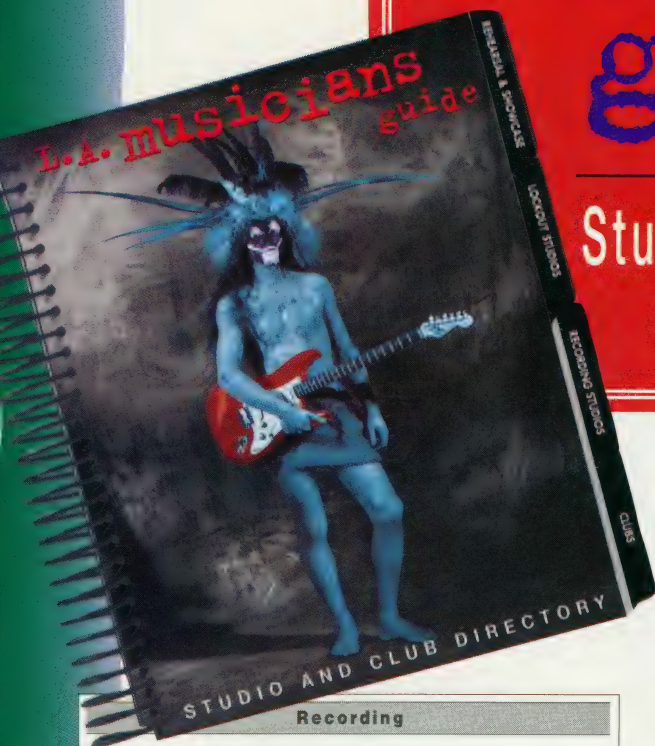
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On occasion, young composers who read my writing or hear my music send me tapes of their music. For some reason, unknown to me, they seem interested in what I think of what they write, and what they might do to further their chances of scoring film. I think I've said quite enough on the latter subject, and were it up to me we all would be ceaselessly busy creating music for untold profit. On the first topic, my opinions are my opinions, and who am I to tell someone if their music is good or not? I've written lots of music that I loved and other people hated, and vice-versa. I like what I like, and don't like what I don't like. I'm certainly not the arbiter of taste and quality in the field of film scoring, or any other field for that matter.

I've heard a number of tapes now, some more enjoyable to me than others. But one that I heard recently made me think for a while. The composer told me of his deep interest in scoring film, and listed some of his influences and film score heroes. It was a great list of composers, including several of my own favorites. I looked forward to listening to the music. During a break from my work I played the cassette.

The music was good. In fact it was very good. Some of it was orchestral, played by what I assumed was a university student orchestra. Other pieces were electronically realized, but were in a similar musical style. This guy obviously knew which end of the pencil goes up. The harmonies were interesting, the orchestration was sophisticated, and generally the piece came across as well conceived and executed. It was quality contemporary orchestral music.

But there was a problem, and the problem put me in a bind. I couldn't decide how to respond to this fellow. While I really liked what I heard on the tape, it seemed obvious (to me anyway) that this simply was not music for film. It was music in a very different genre, for a very different purpose. I've heard a great deal of film music, and written a chunk of it as well. There is something to the kinds of music that work to picture. It is a vastly wide category, but it does have boundaries. This music fell well outside of even those broad limits.

Why? That's a tough question (glad I asked it). Several books have been written on the nature of film music — much of it is rather academic for me. Film music has a marvelous history that has defined what we hear and compose today for film or television.

This starts to touch on the nature of art and art history. In the study of one's art (be it aural, visual, or literary), the basic lessons are to look

at and study what has come before. Music students may study the works of Bach or Mozart (or, God help us, Palestrina) to come to some kind of understanding of how and why these exemplary artists did what they did. Studying the art of the past helps to see the art and artists of the present in a more clear light. For those desiring to become artists or composers, studying the art and artists of the past also helps to avoid reinventing the wheel. Fortunately for the non-academics among you who are interested in the art of film scoring, you don't even need a library card — just go to the nearest video rental store and check out what's there, or go to any record store and look in the soundtrack bins.

The state of any art — music, visual, or literature — is defined by the major figures currently engaged in creating works for the public. In film scoring, that would include (but not be limited by) such established people as John Williams, Jerry Goldsmith, Ennio Moricone, Danny Elfman, Hans Zimmer, and the many others at the tops of their careers. If you look at the entire field of working film composers, you see a huge amount of stylistic variance and many different dramatic approaches. Today's major films have scores that range from serious symphonic music to jazz, electronic, ethnic, techno, and other influences. No one style or composer defines film music today. Yet each artist comes from a perspective of awareness of the music of past films and applies it to his or her own (hopefully unique) musical sensibilities.

Though there is tremendous diversity in today's film music — certainly compared to the scores of 40 or 50 years ago — some musical elements don't seem to fit into the film music genre. Contemporary avant-garde music shares many facets with film scores: They both can be very abstract and textural. But where "art" music can be as demanding and difficult as the composer wishes, film music cannot go so far in any direction that it takes the listener's attention away from the rest of what is happening in the film. Successful film scores always know how to leave room for the picture. They are highly linear and emotional, and often surprisingly melodic. Film music flows in rhythmic waves that blend with the action of the story

and the editing of the picture.

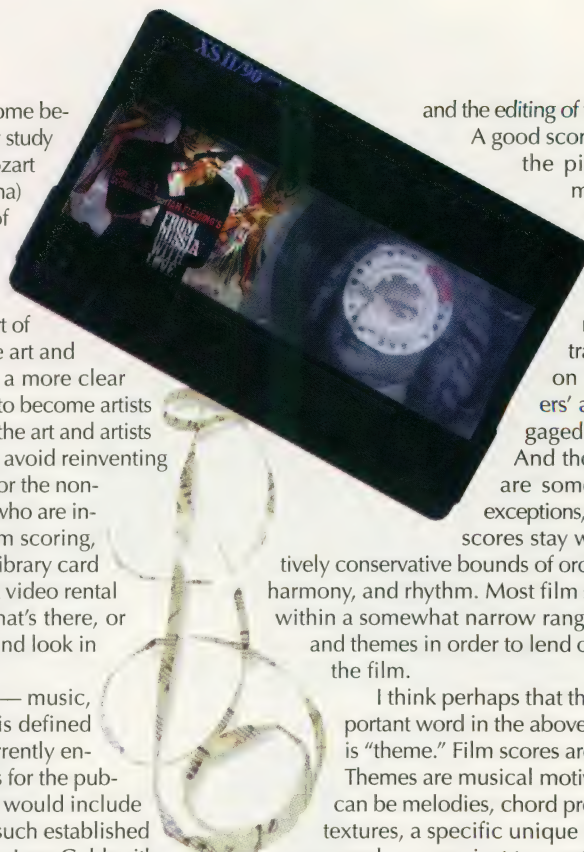
A good score supports the picture and makes it look better than it really is by not making extra demands on the listeners' already engaged attention. And though there are some fantastic exceptions, most good scores stay within rela-

tively conservative bounds of orchestration, harmony, and rhythm. Most film scores stay within a somewhat narrow range of colors and themes in order to lend cohesion to the film.

I think perhaps that the most important word in the above paragraph is "theme." Film scores are thematic. Themes are musical motives — they can be melodies, chord progressions, textures, a specific unique instrument or sound, or even just two notes that are tightly linked to specific elements in the film. A score will build themes throughout a movie to go with the principal characters, with aspects of the action (suspense theme, love theme, etc.), or with important locales. Themes are usually the basis and foundation for a film score. If you listen carefully to a soundtrack, try counting how often a particular theme is stated in whole or in part. You may be very surprised.

To become proficient in composing music for films, it is critical to listen to the music of the past and present before making the decision to ignore it and go your own way. Music is a language — and film music is a language used to help tell the story of the picture. It is far less about making a personal musical statement, and in that respect it differs greatly from other "fine" arts. Film music is not created to stand as great music, though the best film music does just that. It is one part of the collaboration that goes into making a movie. ■


Jeff Rona is a composer and synthesist in Los Angeles. He was chairman of the MIDI Manufacturers Association for five years, and coordinates the UCLA Extension Electronic Music Program. In his spare time he has scored the music for Homicide, Chicago Hope, and other TV shows and films.






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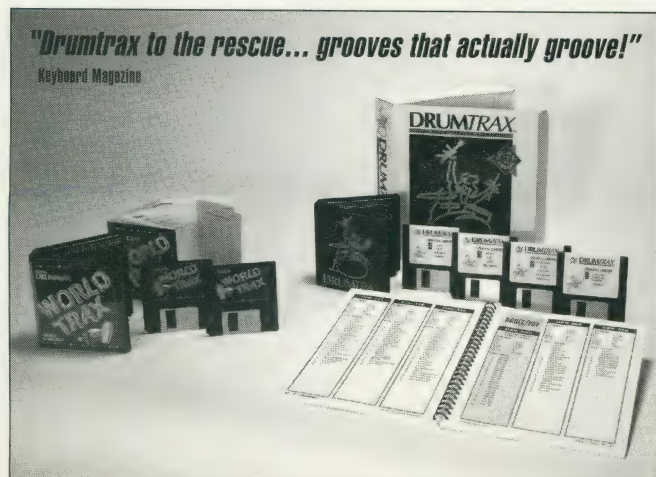


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Originality is the first thing that really makes me sit up and pay attention to a tape. If a musician does something that only *they* can do, they've got my vote. But let's face it, any rule can end up being an impediment. Some things aren't terribly original, yet they still work. This month's Discoveries features two guys who fall into this category.

In fact, Henry Winckel's music sounds a bit too familiar on first listen. But on second and third listen (yes, I really do play most of the tapes more than once), his skills as a player and producer begin to emerge. All the parts of his music fit together beautifully and logically as he somehow treads that fine line between familiarity and cliché. While listening to his cassette *Crystal Dawn*, I kept thinking, "Of course it should be like that," forgetting that I'd heard this sort of thing before. Part of the magic comes from what Winckel injects into the music through his phrasing. Those subtle adjustments in time, especially playing in front of the beat, that good players learn give his music an unflagging momentum.

On the other hand, Matthew Davidson relies more on technology to rev up his sound. "I don't consider myself a musician at all," he says. "I can't play too well, so I have to take all kinds of liberties with tempo and such. But by working with the computer, I can come up with an approach that I like. I just bounce ideas off of the machine as I go."

As with Winckel, on first hearing, these ideas didn't flatten me as an all-new take on music. Most folks familiar with what was called progressive music in the '70s and '80s will recognize his style of writing and playing. Still, the music sounds like more than just a fusion of prog rock and the best of '80s moody songwriting with a techno flair; it sounds like . . . Matt Davidson. The metrical changes are smooth, the soloing is crisp and melodic, and the drum programs are imaginative. "Most keyboardists don't have anything in their background to prepare them adequately for drumming," he points out. "I've worked closely with drummers, and I take that aspect of playing very seriously."

Lately, Winckel has also devoted himself to full-time MIDI work. Recently relocated to the foothills of the Sierra Nevada just outside Sequoia National Park, he has become a solo player after years of gigging in L.A. His feelings are mixed: "I really miss playing live, performing on a stage, although I can't say that I miss the ego trips and drummers who play too loud. MIDI definitely gets around that problem. Still, there are limitations to how well I can play like a wind instrument, for instance. For that reason alone, I don't think there's anything wrong with MIDI and sequencing; there's just so much power avail-

able there. Before I broke it, I used to use my Ensoniq ESQ-1 for all my sequencing; I felt it could do everything I needed. Now, with the Mac and Vision, I can really fine-tune things."

Both Davidson and Winckel are shopping some of their product around. But their approaches are totally different. Winckel is trying to find a publicist/promoter through his connections in L.A. to increase the visibility of his already successful cassette release and to make this release available on CD. Davidson is side-stepping the big city by going digital and promoting his upcoming CD through his own web site, accessible at <http://www.access.digex.net/matthew>. "I like this approach," he says. "I think I can really break down some of the 'genre-izing' this way."

Honorable Mentions

Name: Bob La Delfa. **Style:** Funk/pop/jazz. **Influences:** Dad, Rick Wakeman, Camel, Bob Marley, Liberace, Mr. Spock. **Contact:** 251 N. Winton Rd., Rochester, NY 14610.

La Delfa comes up with some snappy hooks here and there, but elsewhere he gets tied up in licks and forms that seem a bit too familiar.

Name: Kevin Cox. **Style:** "Post-derivative nowism." **Influences:** Charlie Parker, Miles Davis, Chick Corea, Weather Report, Yes, Pink Floyd, Tangerine Dream, Steely Dan. **Contact:** 1522-R High St., Davenport, IA 53803. A helter-skelter mish-mash of jazz fusion and prog rock. Amusingly frantic in places, but generally well conceived.

Name: John B. Mannes, Jr. **Style:** "filmless soundtracks." **Influences:** John Cage, Keith Jarrett, McCoy Tyner, ELP, Kansas, Bob James, Peter Gabriel, Thomas Dolby. **Contact:** Media Music, 5104 MacArthur Blvd. N.W., Washington, DC 20016. Mannes's release, *Acceptance*, is chock full of beautiful, simple-yet-surprising pieces. Each exposes Mannes as a gifted melodic composer who is also no dunce in texture and design. Once he irons out a few rhythmic and organizational lapses, Mannes will win some notice among fans of dreamscape music.

Name: Doug Robinson. **Style:** Electric jazz. **Influences:** Don Grolnick, Rob Mounsey/Flying Monkey Orchestra, Michael Brecker, the Beatles, Pat Metheny, Liz Story, Billy Barber (Flim & the BBs), Weather Report. **Contact:** Act As If Music, 335 High Sierra Dr., Exeter, CA 93221. Robinson is a fine player. His smooth touch and clean lines lend a comfortable, sweet feeling to his solos, and his ensemble playing moves effortlessly from new-agey lyricism to elegant, swinging jazz. His most recent release, *Art Can't*



Name: Henry Winckel. **Style:** Contemporary instrumental jazz. **Age:** 45. **Influences:** Oscar Peterson, J. S. Bach, Otis Spann.

Main Instruments: Korg 01/W & M1R, Roland JD-900, SP-700, & Sound Canvas, Oberheim DPX-1 & Matrix-1000, E-mu Emulator II & Proteus/1, Yamaha TX802, Casio CZ-101, Macintosh II w/ Opcode Vision. **Contact:** Box 804, Springville, CA 93265. (209) 539-3412.



Name: Matthew Davidson. **Age:** 25. **Influences:** Wendy Carlos, Allan Holdsworth, David Sylvian, Frank Zappa.

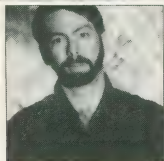
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Name: Craig Ochibuko. **Style:** Jazz. **Influences:** Joe Zawinul, Miles Davis, Keith Jarrett, Bill Frisell, Kei Akagi, Russell Ferrante/Yellowjackets, Pat Metheny, Mahavishnu. **Contact:** Lira Music, Box 3178, MTB Hills, CA 90640. As a longtime member of the band Continuum, Ochibuko has developed a sharp, expansive approach to electric jazz. His solo is outstanding for its subtle twists on traditional notions and conventions. And his ensemble performance is well-crafted and unfailingly energetic. ■

Titus Levi, founder of the California Outside Music Association, spends his free time struggling through graduate economics courses at U.C. Irvine. If you'd like to appear in Discoveries, send a cassette or a CD of your best material, a letter indicating your full name, age, style, influences, performance credits, goals, and equipment, a publishable phone/fax number and address at which readers may contact you, and a clear black-and-white photo of yourself with your keyboard setup. Photos should be labelled with your name and the photographer's name and address. All styles of music will be considered. Due to number of submissions, material cannot be returned, and applicants will not be contacted unless accepted. Send all correspondence to Titus Levi, 5153 Hanbury St., Long Beach, CA 90808. Titus also invites Discoveries alumni to keep in touch with news about career advances.

solo piano



FRED HERSCH

When 3/4 is More Than 75%

After taking a month off for an “arpeggio break,” I thought we should work on another type of tune. I selected “Someday My Prince Will Come” because

playing in 3/4 time makes specific rhythmic demands in a solo context. Your improvised lines will be dramatically different as they follow the different metric accents. Comping

in 3/4 will expand your range of accompaniment figures for the left hand. Also, many 3/4 tunes tend to have one change per bar — a slow harmonic rhythm in contrast to

Ex. 1. When you first begin work on a new tune, play it in a wide range of tempos to see where you feel the most comfortable. In the case of “Someday My Prince Will Come,” try tempos between 68 and 144 bpm. Roll the chords a bit so you can hear each chord tone.

B♭maj7 D7#11 E♭maj7#11 Dm7 G7 Cm7 G7aug Cm7 F7sus E♭dim

Ex. 2. Make it your own with substitutions. In the second bar, the E6add9#11 is a tritone substitution, since the original D7#11 is functionally the same as tonic harmony in the first bar. The substitutions in the fourth bar are a result of the melodic motion of the bass, which is just as important an approach to reharmonization as chord substitution. The G♭6add9#11 in bar 7 is another tritone substitution, even though it's in addition to the existing chord rather than replacing it.

B♭13 E6add9#11 E♭6add9#11 G7sus Cm7sus G7aug9♭13 C9#11 F9sus E♭m6
E6add9#11 G7♭9/B G7♭9/B E6add9#11 Em7♭5

Ex. 3. Feel the top melody note on the right side of your right hand, almost as if you are shaking hands with the melody. Similarly, the left side of your left hand should be gently weighted toward the bottom note. Use this rotation from the outside melody and bass notes to the inner voices will help keep your rhythm consistent yet relaxed.

most 4/4 tunes and especially ballads, which often have as many as one chord per beat. Plus, "Someday My Prince Will Come" is one of the classic jazz waltzes, having been recorded by Miles Davis, Bill Evans, and countless others. And to think it was introduced in Disney's classic animated feature, *Snow White*, over 50 years ago!

Let's start with the basic chords and melody for the first eight bars (Example 1). I use only four voices. As I have mentioned in *previous columns*, a good four-voice structure is the most solid foundation you can have when constructing an interpretation of any tune.

If you want to have better inner-voice movement, roll the chords so you can really hear each note and make decisions about

voice-leading. Whatever you play, always pay attention to the balance between the voices and between your hands.

Taking our exploration a step further, let's add some altered harmonies and substitutions, and an extra note or two (Example 2). Compare and contrast Examples 1 and 2 to understand the logic behind my alterations. The basic tools you have in this regard are tritone substitutions, changing chord colors, emphasizing melodic motion in the bass, and voice and leading tone manipulation. A good extra step is to try to transpose the examples, or your own versions of them, to several other keys; this will help you get to know the tune!

Now let's move the bottom note of each chord down an octave, split up the chord members between the hands, set up a rhyth-

mic pattern, and drop the melody into it (Example 3). You'll notice some large intervals in the left hand of this example; when you jump from the bottom bass notes to the inner voicings, use the pedal a bit to catch the chords without muddying them.

As you get more comfortable, add some improvised lines to the mix while keeping the rhythm going. It will seem like juggling three balls at once, but it will get easier as you continue to work on it. If you proceed step by step as in the examples to develop your rhythmic and harmonic approach to this (or any) tune, you'll always be rewarded with a greater understanding of the material and a more personal interpretation. Next month we'll focus in on approaches to improvising right hand lines over this great tune. ■

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CRAIG ANDERTON



Hum Scum & Ground Loops

What was that buzz? That strange hum? The digital hash from your computer that's showing up in the mic preamp? You may be a victim of *ground loops*, which can occur easily when using multiple AC-powered devices. But before we can solve the problem, we need to understand what causes it.

A ground loop means there is more than one ground path available to a device. In the diagram at right, one path goes from device A to ground via the AC power cord's ground terminal, but A also sees a path to ground through the shielded cable and AC ground of device B. Because ground wires have some resistance (the electronic equivalent of friction), there can be a voltage difference between the two ground lines, thus causing small amounts of current to flow through ground. This signal may get induced into the hot conductor. The loop can also act like an antenna for hum and radio frequencies. Furthermore, many components in a circuit connect to ground. If that ground is "dirty," this noise might get picked up by the circuit. Ground loops cause the most problems with high-gain circuits, since massive amplification of even a couple millivolts of noise can be objectionable.

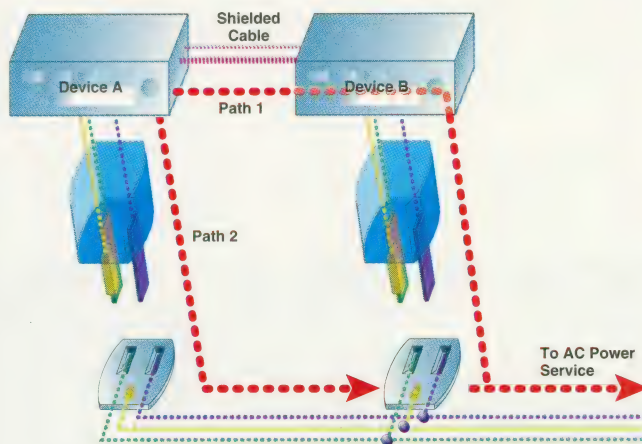
There are two main fixes: Break the loop by interrupting the audio ground, or break the loop by interrupting the AC ground line. The preferred method depends on the nature of the problem, so let's look at various options.

BUT FIRST, A NON-SOLUTION: GROUND LIFTERS

Some musicians who are unconcerned about longevity simply "lift" the AC ground by plugging a 3-wire cord into a 3-to-2 adapter. However, this is *definitely not recommended* since it obviates the safety protection afforded by a grounded chassis. Rather than my spending the next page explaining why you shouldn't do this, just don't do it, okay?

SOLUTION #1: THE SINGLE PLUG THEORY

Many ground loop problems can be solved by plugging all equipment into the same grounded AC source, which attaches all ground leads to a single ground point (for example, a barrier strip that feeds an AC outlet



through a short cord). However, it is important to make sure that the AC source is not overloaded and is properly rated to handle the gear plugged into it.

SOLUTION #2: THE BROKEN SHIELD EFFECT

A solution for some stubborn ground loop problems is to isolate the piece of gear causing the problem, and disconnect the ground lead (shield) at *one end only* of one or more of the audio patch cords between it and other devices. The inner conductor is still protected from hum by a shield connected to ground, yet there's no completed ground path between the two devices except for AC ground.

If you make your own cables, it's worth wiring up a few special ground loop-buster cords with a disconnected shield at one end. Mark them plainly; if used as conventional cords, you'll encounter hum, loss of level, and other problems.

Sometimes a ground loop shows up as objectionable only if the grounded metal chassis of a piece of rack-mount gear contacts the metal rail of a rack cabinet. There's an easy fix: HumFrees from Dana B. Goods ([805] 964-9610, fax [805] 964-9749) are little plastic strips that attach to your device's rack ears and insulate the device from the rack. I've used these with rack-mount computer peripherals that dump a lot of garbage to ground, and the HumFrees seem to have made a difference.

SOLUTION #3: AUDIO ISOLATION TRANSFORMER

Using a 1:1 audio isolation transformer is much more elegant than simply breaking the shield,

but accomplishes the same thing: It interrupts the ground connection while carrying the signal. Although a cord with a broken shield is less expensive, the transformer offers some advantages. If necessary, you can change impedance or levels simultaneously by choosing a transformer with different impedances for the primary and secondary windings (e.g., use the transformer to boost the level of a device with a fairly low output; this gives less noise than turning up the mixer's preamp gain). Also, simply breaking the cord shield can increase the

amount of cable capacitance, which can be a problem with higher impedance cable runs.

For a commercial implementation, check out Ebtech's rack-mount Hum Eliminator (two-channel version \$69.95, eight channels for \$279.95). This consists of audio transformers in a rack-mount case, and uses TRS (tip/ring/sleeve) phone jacks that work with balanced or unbalanced lines. To "break" an audio ground line, just use one of the transformers in the Ebtech instead. (Ebtech also makes a model that converts back and forth between +4 and -10 signal levels.) For more information, contact Ebtech at (201) 389-1718, fax (201) 389-1917.

SOLUTION #4: AC ISOLATION TRANSFORMER

Many times, you can also break a loop by removing the direct connection from a piece of gear to AC ground. This doesn't always work because the ground loop may not involve the AC line but various ground-to-ground connections; however, loops involving the AC line generally seem to be more problematic and common. Breaking audio is a simpler, lower power solution (and can also minimize computer-generated "hash"), but an AC isolation transformer provides ancillary benefits. Last month's column gave the full story; in summary, an AC isolation transformer can clean up the AC line, reduce spikes and transients, and provide performance almost equal to that of a separate AC line.

One such device is made specifically for musicians: MIDI Motor's Hum Buster, which has a large transformer with ten isolated AC

outlets (\$455) or 20 outlets (\$539). For more information, call MIDI Motor at (909) 684-7555, fax (619) 295-9755.

So which is better, breaking the audio connection or the AC connection? It depends. If you have a lot of microprocessor-controlled gear and less than ideal AC, adding isolation transformers can solve various AC-related problems and get rid of ground loops. If you just have a simple ground loop problem, then patching in audio isolation transformers may be all you need.

SOLUTION #5: DON'T WORRY, BE HAPPY

No one with technical training would recommend the following approach, so don't bother writing me or *Keyboard* and saying this is all wrong. I know it's all wrong — but I can't help it if it works in some instances!

Here's the deal: Don't worry about ground loops. In fact, make as many ground connections as possible: Connect rack units to the metal rack case, run wires between the ground connections on various rack frames, run more wires from the rack frame to the metal cases of barrier strips, and so on. Your system ends up with so many ground lines that the overall resistance to ground drops to just about nothing (putting resistors in parallel lowers the resistance). Essentially, you're creating what's called a *ground plane*.

I discovered this technique years ago when I was having some serious ground loop problems, accompanied by a looming deadline, in my unbalanced -10 studio. I've since gone back and wired things "properly," but I pass this incorrect technique along to those who have ground loop problems and looming deadlines, and don't have the patience to rewire their studio.

Happy humbusting, y'all! ■

Craig Anderton wishes he had the right kind of voice for singing dance hall reggae. But since he doesn't, he'll continue writing articles, working on his next CD, lecturing all over the place, and maintaining his area on America Online (keyword SSS).

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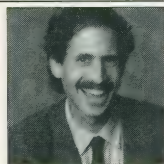
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RICHARD LEITER

Reach Out and Torch Someone

I went to see the very talented Eileen Clark sing at a stylish showcase club in Los Angeles. Her material was a jazz-flavored blend of Anita Baker and Basia, all fresh and original except for one song, the standard, "Since I Fell for You." This classic is one of my favorite torch songs, a prime example of that genre that leaves you sobbing on the bar. But it just didn't seem to belong with the rest of Eileen's more contemporary set. She needed a ballad at that point in the show, but something that meshed more with the rest of the songlist. Backstage, amid kudos, she asked me if I would write her a song to replace "Since I Fell for You." I assured her that nothing could possibly replace that immortal work, but I'd try to come up with something nice.

For you non-singing songwriters, I urge you to get your tunes to good local singers. Even if your songs don't make it onto platinum albums, you'll have the voyeuristic (and educational) thrill of hearing a live audience respond to your effort. You'll also be a little further along in the demo process, because you'll have a singer who knows (and probably likes) the song.

To begin Eileen's ballad, I started with a version of the triplet figure that begins "Since I Fell for You" (Example 1) and updated it (Example 2). Instead of triads I used more ambiguous voicings with clusters of color tones. I suggested a triplet feel with the bass, rather than stating it with a repeated right-hand pattern. I also changed the major IV chord to a minor to make the figure darker.

Melodically, I let myself be guided by Eileen's voice. She has a husky, breathy quality from D over Middle C to the A above. I let the verse melody fall naturally into that range, which suited the melancholy and reflective mood of the lyric at that point. Her upper range is brassy with an edge, so I set the hook and the chorus in that tessitura.

I'm not a trained singer, which helps me as a songwriter. If I write something that I can sing naturally and without straining, then a polished singer can really go to town on it. I'm not likely to write something that's impossible for a singer to handle, because I wouldn't be able to sing it in the first place.

I don't analyze a project too much as it's emerging. There are a million ways to approach writing a song: You can come up with the first line of the first verse, the last line, the first line of the chorus, or a groove. You can draw on the inspiration of an emotion, a glance, or the moonlight in your lover's eyes as you pitch forward into your beer. In the case of this song, I looked for a strong title and let

Ex. 1. This tried and true I-VI-IV-V progression, or one of its many variants, has been the basis of many a hit, from the '50s to the present. It's also a cliché. With garden-variety triads and that doo-woppy bass line, it's bound to sound familiar, a situation that can breed you-know-what.

Ex. 2. I updated the warhorse from Example 1 by extending the harmonies. In bar 1, the right hand voicing makes use of the sevenths and ninths of both chords, and avoids the third as well. With the crunch provided by the adjacent A and Bb, this adds up to a sexy, ambiguous sound that supports the longing and passion of the lyrics. To complete the transformation, I changed the IV chord to minor, and reduced the triplet feel to a pulsing sensation in the bass.

Ex. 3. Do jazz voicings belong in pop tunes designed for commercial success? I think so. This excerpt is the hook of "I'd Rather Be with You," the most important moment in the tune. Underscoring the moment of greatest tension is a Bb13b5, which makes the subsequent EbMaj9 ring out with the directness of the lyrics it supports.

the song develop from there.

"I'd Rather Be with You" seemed like something a lover might blurt out in a moment of painful clarity. Nothing you or I would ever admit to, of course, but it had an honest and straightforward quality. I fooled around for a while and settled on a chorus that I liked. Then I wrote the verse.

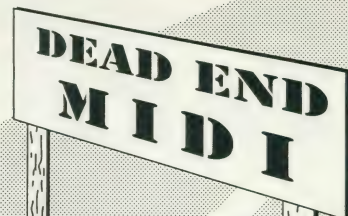
While I try not to censor while I'm writing, I do have to make editorial decisions. An important one in this case was whether to leave that big old B \flat 13 \flat 5 right under the hook — the absolute most important moment in the song (Example 3). I mean, what kind of lunatic puts a sophisticated jazz chord in a pop tune?

Well, I did it not only once, but three times. I figured that given the harmonic context, it wouldn't be out of place. Plus, I wanted a truckload of tension before going to that IV chord, and nothing delivers quite like a 13 \flat 5 chord. Heck, that's why they're there. Try it yourself if you don't believe me.

Next month, we'll take a look at "I'd Rather Be with You" in its entirety. I'd like to share some additional techniques for making the most out of dramatic musical moments over the form of a whole song. ■

As a composer and songwriter, Richard Leiter has done projects for a wide variety of clients, NPR, Honda, Carl's Jr., ABC/TV, and Inglenook Wines among them. He writes and performs in California.

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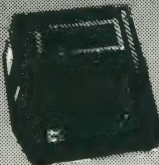
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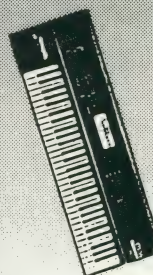
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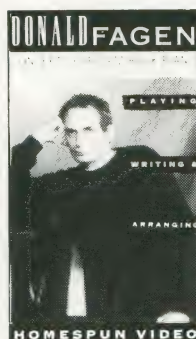
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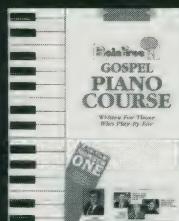
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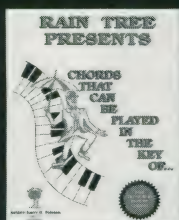
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letters

◀ Continued from page 8

a 16-track sequencer featuring an LCD that offers help screens in multiple languages. Yamaha's PSR6000 is a poor copy. Next time you promise to "reveal all" when it comes to new gear, don't forget that's what readers like me expect to read.

Rick Lawson
Arlington, TX

Reader Tape Contest

I would like to thank you very much for selecting my piece among the winning entries in your tape competition [May '95]. It is truly a great honor. But thanks even more for doing something to recognize and support up-and-coming musicians. It's not just the fact that you had the competition but the enthusiasm in your article and your desire to publish the winning entries to whatever extent is feasible: This seems quite consonant with *Keyboard's* overall mission, which I see as empowering its readers in the areas of technique, technology, and creativity.

I also want to thank my good friend and teacher, Roger Kendis, without whose support and example I could never have written "Shine the Light of Truth." I hope you and interested readers will have the opportunity to hear the pioneering work he has done with the voices of Presidents Bush and Clinton on the CD singles "Hard Times" by Fresh Bush and the In-

visible Man, and "It's About Hope" by Fresh Clint and the Invisible Man.

Jeremy (Yirmeyahu) Fox
Philadelphia, PA
via Internet

Benmont Tench

Your interview with Benmont Tench [May '95] answered a lot of my questions as to what the hell happened to the soulful, groovin', rock and roll sound that used to emerge from Tom Petty and the Heartbreakers. So Jeff Lynne doesn't like Hammonds? It's now apparent why every album since *Let Me Up* has lacked that hard edge. My heart goes out to Benmont. He was once part of a great band, and now his creativity has been stifled by Lynne. No wonder Stan Lynch left the group: Lynne must have restricted him to that trademark, no-soul, eight-beat rhythm. What Rasputin was to the Romanovs, Jeff Lynne is to the Heartbreakers.

Jeff Pickett
Moorpark, CA

Trashed By Trivia

I think the mystery company you refer to is Ensoniq.

Neal Koumjian
Waltham, MA

[Sorry, Neal. But don't feel bad; since Dominic first posed the question in his May '95 *Directions* column, nobody has been able to guess

which major company we forgot to mention in at least two consecutive NAMM reports. So who was it? It was . . . uh, it was . . . gee, I forgot. Oh, yeah: Korg! The fact that no one noticed probably says something, although we can't quite remember what. In any event, apologies again to everyone at Korg.]

Leslie Flashbacks

Thanks for another great article for us die-hard Hammond Heads! Your review of Leslie simulators [May '95] was both informative and confirmative. Ever since parking my Hammond in '81 in favor of a then brand-new Korg BX-3, I've been grinding my teeth over the inadequacies of both Hammond and Leslie simulation. The only solution for gigging with the Korg (or any other "Hammond" sounds) is to run them through the real McCoy, preferably the Leslie 122. But when one ventures into MIDI sequencing, the problem rears its ugly head again. The advent of programmable Leslie control will hopefully make playing sequences back not such an exercise in futility. Chasing noisy, wimpy-sounding pedals around the studio for every mix gets old fast. My fingers are crossed as I get ready to audition the Voce Spin, hoping that it will be the answer. But I can't help but wonder: Remember the battle to capture the real piano sound? Maybe the Leslie will prove just as evasive.

Scott E. Shuster
Ocean Park, ME

Ex. 4. A variation of the keyboard pattern shown in Example 1, during which Bruford plays a drum solo.



or concert reviews to The Eric McWhirter Foundation here at *Keyboard*. The best entry will receive a signed copy of McWhirter's outstanding new album, *Great TV Themes of the '70s*, a collection of 50 or so memorable signature tunes played in the master's familiar haunting "black note" style.

Meanwhile, on planet Earth, we mere mortals struggle humbly on, and I, in my capacity as trusty musical scribe, have procured for your entertainment, at huge expense, yet another piece of keyboard-based music. [*Ed. Note: That's enough commas.*] This piece was written by a team consisting of my old mate Bill Bruford (drums), Django Bates (keyboards), and Iain Ballamy (sax), collectively known as Earthworks. It is not entirely clear who wrote what, but let's say, for the sake of argument, that Bill wrote everything above Middle C and Django everything below, with the exception of the fifth, seventh, and eleventh note of every bar, which were written by Iain.

The tune, titled "My Heart Declares a Holiday," is the sort of thing that I should like to have written, but I was unable to contribute to the composing process because, regrettably, my surname does not begin with "B." However, as co-producer of the first Earthworks album (a job which consisted largely of sitting in amazement as the band played hour after hour of mind-boggling music, then crying "hey — let's have lunch" whenever producer input was required), I do happen to have in my possession a floppy disc on which Django Bates performed a MIDI guide version of the keyboard part, and after a mere eight weeks of analysis, am able to show you this notated version of the main keyboard pattern (see Example 1).

This does, I grant you, appear a bit fierce, but it is actually easier to play than you might think. As a starting point, I would advise you first to get familiar with the metric scheme by playing the top line of the right hand; as the dotted line indicates, the 13/8 metre is subdivided into 6/8 and 7/8. The 7/8 pattern is the same as the 6/8, but with an extra eighth-note grafted onto the end. Once you've mastered the rhythm, it's simple to add the right-hand harmony, which is for the most part thirds and fourths (though the jump up to a major

sixth at the end of the line can be a little tricky).

On now to the left hand. This looks scary, but all it really does is mark the 6/8 and 7/8 downbeats with a low E, then fill in all the gaps in the right-hand part with the E one octave higher (which at one point in each phrase slips down to a D). Rather than agonizing over the ever-shifting relationship between the hands, concentrate on playing the right-hand part with a strong, unwavering rhythm, and you'll find that after a while the left hand will start filling in the gaps naturally, producing a continuous flow of sixteenth-notes. This keyboard technique, best suited to a pianistic or percussive sound, might reasonably be described as "drumming on the piano," and is a style I associate strongly with Bill — his piece "Sahara of Snow," recorded when I was in his band back in the '70s, is also based on this percussive piano approach.

To the ferociously hammering keyboard part we must add a groovy bass line, which you can see depicted here in glorious black-and-white:



It occurred to me while writing out this music that the left-hand keyboard part, if extracted and amplified, might itself work well as a bass line, but this simpler, loping riff has more weight, and provides a better contrast with the rather busy keyboard pattern.

Now comes the hard part — writing out the drum rhythms. Bill accompanies the keyboards and bass with a typically intricate but driving acoustic drum kit pattern based around skittering hi-hat sixteenths, punctuated by alternate snare rim shots and floor tom accents. To the naked ear, it sounds like what's shown in Example 2, give or take a hi-hat or bass drum note . . . and yes, I admit it, while in the privacy of my own home, I do occasionally walk around with naked ears, though of course I wouldn't be seen dead in public without my ear muffs.

Iain Ballamy's sax remains silent at first, but makes its entrance over the music you see in Example 3. Play it, and you will understand why the band referred to this section as the

"Chinese bridge." Both sax and bass double the keyboard top line in their respective registers, and on the final stabbed chord (shown in brackets), the keyboards and bass return to their rhythm duties while the sax parps out the accented short high E note. The observant among you (a.k.a., Dennis Weisenberg of Peekaboogie, NY) will now be muttering suspiciously: "Hold on a minute — Earthworks had only one keyboardist, and none of the other instrumentalists played chordal instruments. How is it then that Django Bates, while engaged in playing a fiddly two-handed keyboard rhythm part, could simultaneously perform a staccato *Emsus4* chord stab?" A good question, especially when one considers that the person posing it is entirely fictitious. There are only two possible answers: (1) Django Bates grew an extra hand, which he trained to play a *sforzando Emsus4* chord on command. (2) We overdubbed the chord. I've been thinking long and hard about this, and I think the answer has to be number one — it's the only practical explanation.

Before leaving you with some weak joke or other, I'd like to show you one more extract from "My Heart Declares a Holiday," in the shape of the juicy morsel you see in Example 4. This rather worried-sounding variant of the main keyboard riff comes in the middle of the piece, and serves as a basis for a drum solo by Bill. Watch out for the change from a B \flat to a B \natural in the right-hand part, and again, don't get too obsessed by the left-hand rhythm — as in Example 1, it is simply filling in some of the gaps in the right-hand rhythm. This pattern was recorded using a delicate metallic keyboard patch, to which Bill added a layer of mini-cymbals playing, if memory serves, a continuous sixteenth-note pattern in 7/4. The ensuing swirl of pitched metal had a strong Javanese flavour, and became known as the "gamelan section."

Okay, that's it. We've run out of space, time, and money, a chip pan has just caught fire in my kitchen, an aeroplane just crashed in our back garden, a herd of cows are stampeding through my music room, and my typewriter just exploded. This would, therefore, seem a timely moment to declare 30 days' holiday. I cannot force you to join me for next month's article, but some of you had better show up, or else I'll be stuck here on page 134 talking to myself. ■

.....
Messages of a psychic nature may be beamed in the direction of Dave Stewart and Barbara Gaskin, South West London, England. Alternatively, scratch cuneiform symbols on a wax tablet and post it to Dave and Barbara c/o Broken Records, P.O. Box 4416, London SW19 8XR, England. It is advisable, however, to think of something to say before writing!

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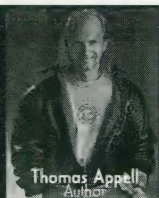
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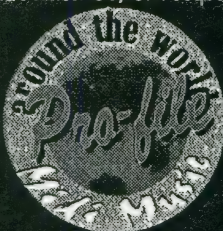
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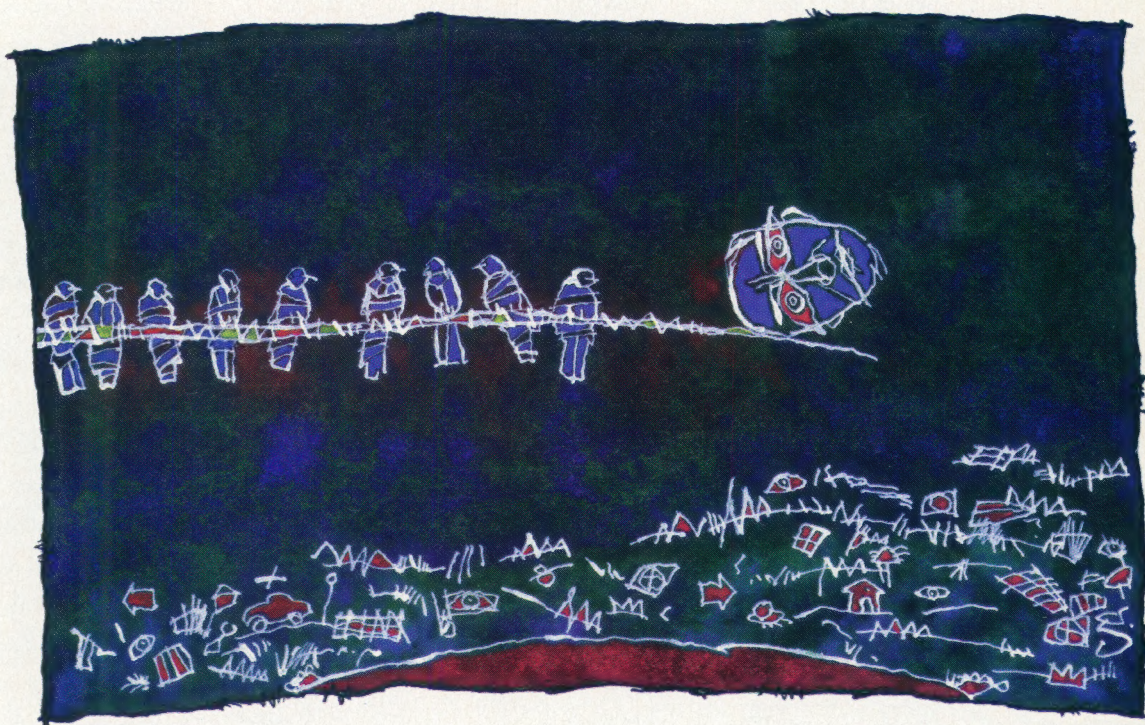
Connections 3: Solitaire

I'm feeling aggressive. Whaddaya say we bulldoze the world? Great! Thank goodness for the human imagination, in which anything is possible. We'll start by snapping our fingers and moving every living plant and animal off-Earth, leaving only pigeons. (Whistle-blowing digression: Pigeons aren't really alive. Trust me on this; I've seen the blueprints. Every pigeon in existence is a feather-plated robot that rolled off a hidden assembly line in Parsippany, New Jersey, as part of a secret government program designed to convince the voting public that there is at least one species more useless than politicians.) And while we're at it, none of that Noah nonsense about gathering insufficient genetic breeding stock together on an ark, no sir — we'll just FedEx 'em all off, aardpig to zinnia, and give 'em individual suites at the Hyatt House Aldebaran (motto: "The perfect vacation paradise for you and 10^{27} intimate friends"). They can come back when we're done with the world, assuming anything is left, and assuming that they want to. Room service in other solar systems is generally very good.

Another fingersnap and we're behind the wheel of an el humongo earth mover, a machine out of the Caterpillar Corporation's wet dreams, fusion-powered, with a blade 200 miles wide and treads that grip straight down to magma. This baby eats dirt big time, but handles like a dream. Forget your Maseratis and Mustangs. This is real power, and we're about to prove it. Shove in the key, turn the starter over — yeah, listen to those twenty gazillion barely-restrained horses throb — and bang into gear. Tierra del Fuego never even knows what hits it. We roll up the Chilean Andes and the Argentine pampas, sweep east to snip off the Falkland Islands, then upend the Amazon and chow down on Paraguay, Bolivia, Peru,

Ecuador, Guyana, and Venezuela. We stop for a real Colombian coffee break and then don't pause again until we share a picnic lunch on the lovely new northern shore of the Panama Canal, which is now somewhere inside Saskatchewan. The earth mover is holding up fine, aside from some pigeon dents in the blade

fingers one final time and disappear, leaving behind nothing but a crumpled piece of brown butcher paper. There's just you and your flannel jockey shorts hanging out together now, learning to orbit, so you unmangle the paper to see what it might contain. You find seven words scrawled in crayon. My parting gift. The point



— those suckers are tough — but time's a-wastin', so we wrap up the rest of the continents double-quick, fingersnap the rubble away, and before suppertime are sitting on top of a world bald and shiny as a fifty-cent marble.

There's just the two of us, beneath a lamp post. It's the tallest thing left on the planet.

"So. What do you want to do?" I ask you.

"I dunno, Marty. What do you want to do?"

Wrong movie. I'm still feeling aggressive; it takes only another fingersnap to slice the whole damn spheroid beneath our feet into giant grapefruit sections and send them whirling away across the void. The moon slinks up like a begging basset hound, but no dice — one harsh word and it's outta here too, leaving you and me floating all by ourselves some 93 million miles from the sun, getting a really terrific tan.

It's all gone. We're alone. There aren't even any pigeons. The vacuum smells like springtime. But it's still not enough. The way I'm feeling, two is definitely a crowd. So I snap my

of the whole exercise.

This challenge, repeated:

"So. What do you want to do?"

I'm serious. Toss out my rabies with the wrath-water if you want, but think hard about the question, and especially I want you to think about it with the rest of the world stripped out of your calculations. We got to this imaginary state of affairs by goofing around, but we got here, so please try and stay. It's important. And test the words for a while before you answer,

Continued on page 128 ►

Connor Freff Cochran is happily busy with a new partnership and new projects, including forays into that strange place called Hollywood. If you are interested in more of his explorations into creativity and life, just write c/o Crossing Point, 47 Lafayette Circle, Suite 180, Lafayette, CA 94549, and ask for a free copy of Connor's Creation newsletter.

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